

FILE NO.

Service Manual

CD Portable Stereo Radio Cassette Recorder

MCH-900L (XE)



Specifications

PRODUCT CODE No.
142 963 31

(CASSETTE SECTION)

Recording system AC bias, 4 track stereo
Erasing system Magnet erase
Tape speed 4.75 cm / sec.
Fast forward and
rewind time 110 sec. (C-60 tape)
Frequency response . . . 80 ~ 12,000 Hz (Normal tape)

(CD SECTION)

Channels 2 channels
S / N ratio 70 dB
Wow & Flutter undetectable
Sampling frequency . . . 44.1 kHz
Quantization 16 bits linear / ch
Pick-up light source . . . Semi-conductor laser
Pick-up wave length . . . 790 nm
Laser output Continuous wave max. 0.6 mW

(RADIO SECTION)

Tuning ranges LW : 148.5 - 283.5 kHz
MW : 526.5 - 1,606.5 kHz
FM : 87.5 - 108 MHz
Antennas Built-in ferrite bar and
telescopic rod antennas

(GENERAL)

Output power 10 W (DIN music power)
Speaker 12 cm x 2, 4 ohms,
PIEZO x 2
Terminal impedance . . . PHONES : 32 ohms
MIC : Suitable microphone
impedance 200 - 600 ohms / 3mV
Power source AC : 120 / 220 / 230 V, 50 Hz
DC : 12 V
(8 x "R20 " size batteries)
Memory back-up DC : 6 V
(4 x "R6" size batteries)
Remote control unit . . . DC : 3 V
(2 x "R6" size batteries)
Dimensions 460 (W) x 220 (H) x 245 (D) mm
Weight Approx. 4.8 kg without batteries

Specifications subject to change without notice.

REFERENCE No. SM580357

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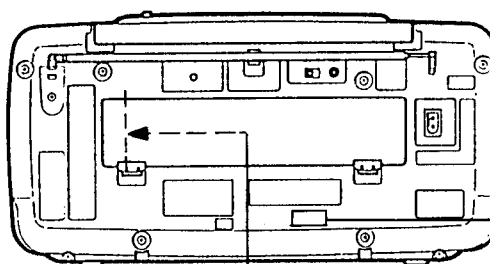
LASER BEAM SAFETY PRECAUTIONS

- Pick-up that emits a laser beam is used in this CD player.

CAUTION :

USE OF CONTROLS OR ADJUSTMENTS
OR PERFORMANCE OF PROCEDURES
OTHER THAN THOSE SPECIFIED
HEREIN MAY RESULT IN HAZARDOUS
RADIATION EXPOSURE

LASER OUTPUT 0.6 mW Max. (CW)
WAVELENGTH 790 nm



CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

CAUTION—INVISIBLE LASER RADIATION
WHEN OPEN AND INTERLOCKS DEFEATED.
AVOID EXPOSURE TO BEAM.

ADVARSEL—USYNLIG LASER STRÅLING VED ÅBNING,
NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION,
UNDGÅ UDSÆTTELSE FOR STRÅLING.

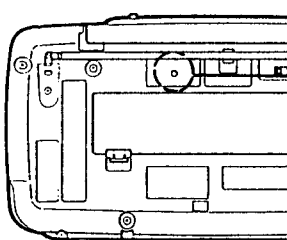
VARNING—OSYNLIG LASER STRÅLNING NÅR
DENNA DEL ÅR ÖPPNAD OCH SPÄRR ÅR URKOPPLAD.
STRÅLEN ÅR FARLIG.

VORSICHT—UNSICHTBARE LASERSTRAHLUNG TRITTS AUS,
WENN DECKEL GEÖFFNET UND WENN SICHERHEITSVERRIEGELUNG
ÜBERBRÜCKT IST. NICHT, DEM STRAHL AUSSETZEN.

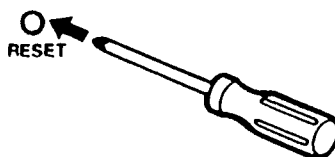
VARO! Avattaessa ja suojauslaitteita ohitettaessa olet alttiina
näkyvättömälle lasersäteilylle. Älä katso säteeseen.



OPERATING THE RESET SWITCH



RESET



WHAT TO DO IF ...

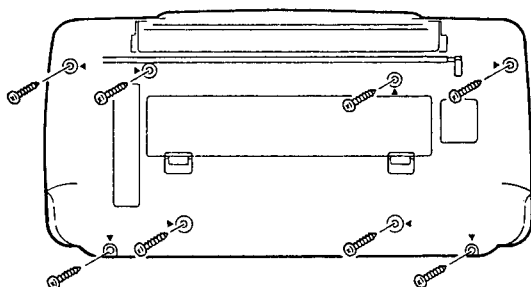
If the operation of the unit or display is not normal, disconnect the power cord from the AC outlet and remove the batteries (if applicable), then press the RESET button (back of the unit) for at least 20 seconds.

REMOVAL AND INSTALLATION

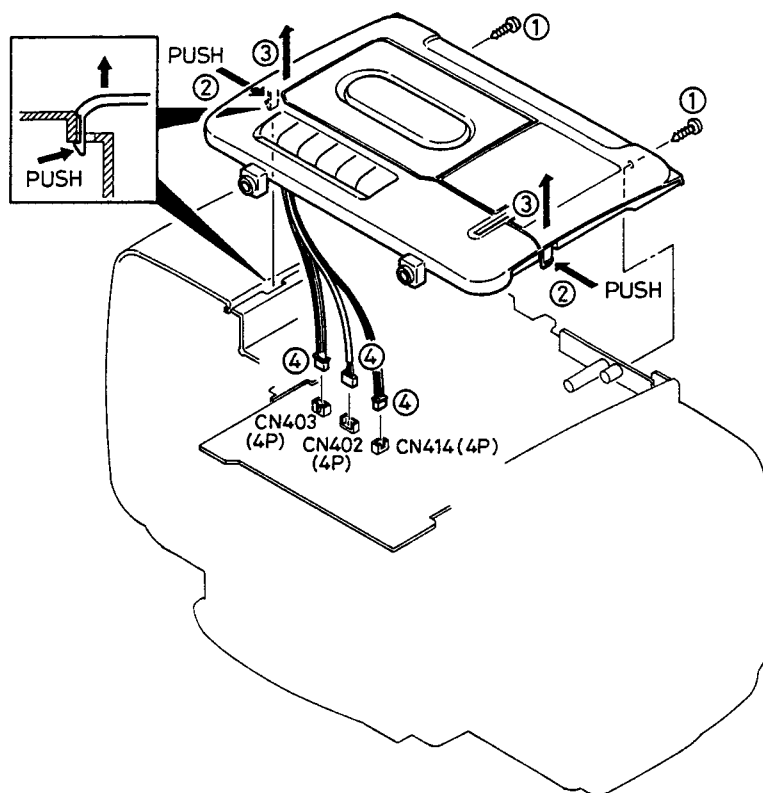
- This CD-radio-cassette player employs a changer mechanism as its CD block. Care should be exercised when removing and reinstalling it.
- All wiring should be returned to the original position after work is completed.
- First have ready many the new FIXERS (614 246 5271) for replacement.
- Arrange the lead wires so that they are not near the heat sink.
- Remove any discs that are loaded in the CD changer.
- Before disassembling the unit, set the POWER switch to the "OFF" position and wait 10 seconds while the CD changer mechanism enters standby status. Then unplug the unit and begin the disassembly procedure.

a. CABINET

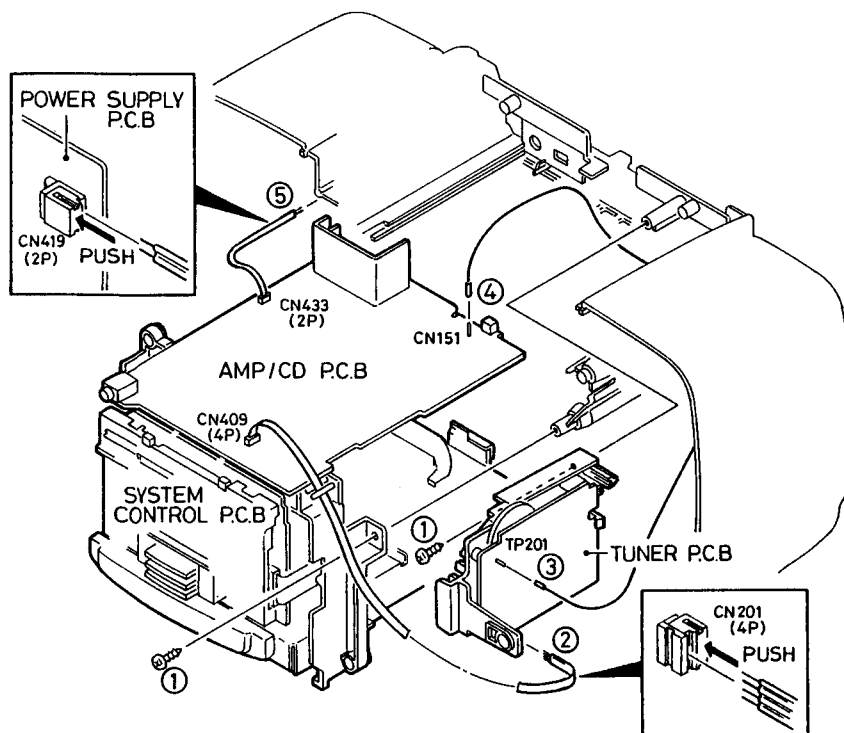
- (1) Remove the battery lid.
- (2) Remove the 8 rear cabinet mounting screws.



b. TAPE MECHANISM



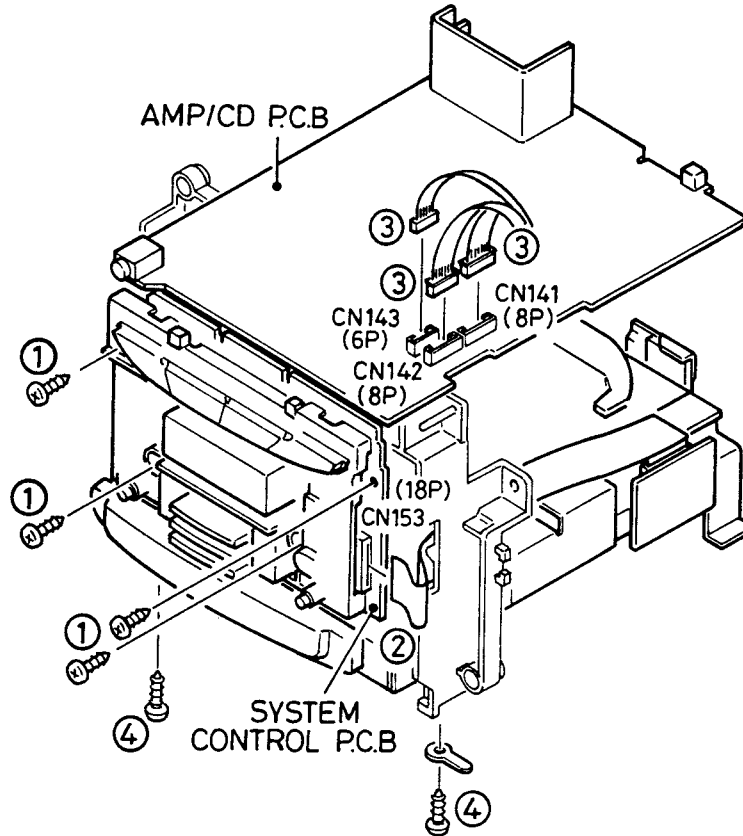
c. CD CHANGER MECHANISM BLOCK & P.C.BOARDS



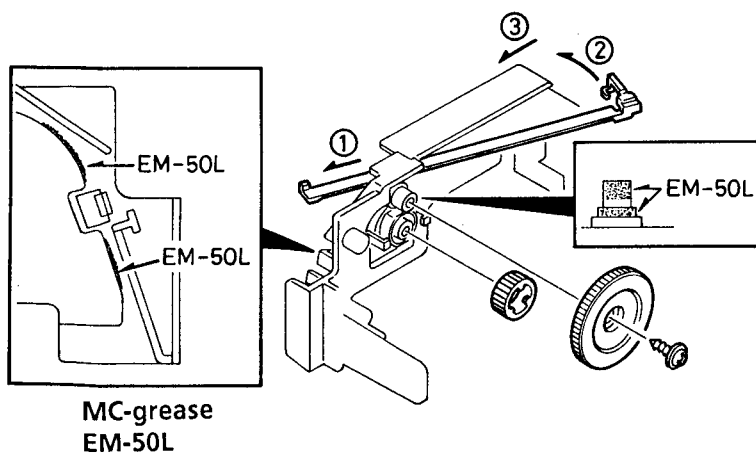
REMOVAL AND INSTALLATION

d. SYSTEM CONTROL P.C.BOARD & AMP. / CD P.C.BOARD

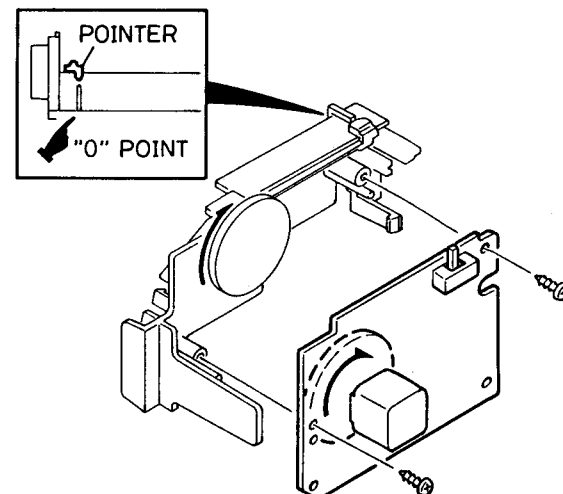
- Pull connectors straight out so that the pins do not bend.



e. MOUNTING, POINTER



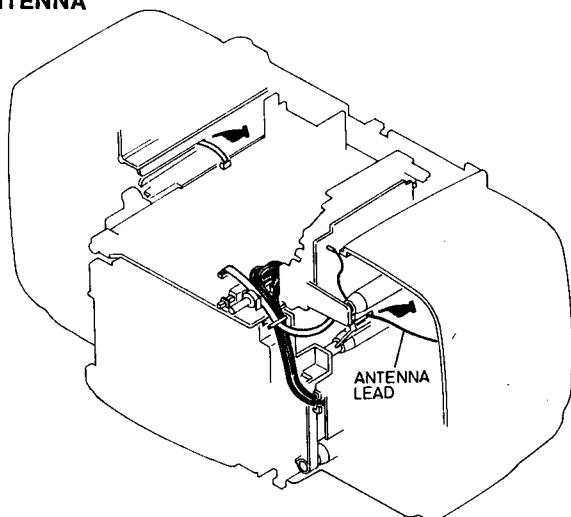
f. "0" POINT ADJUSTMENT



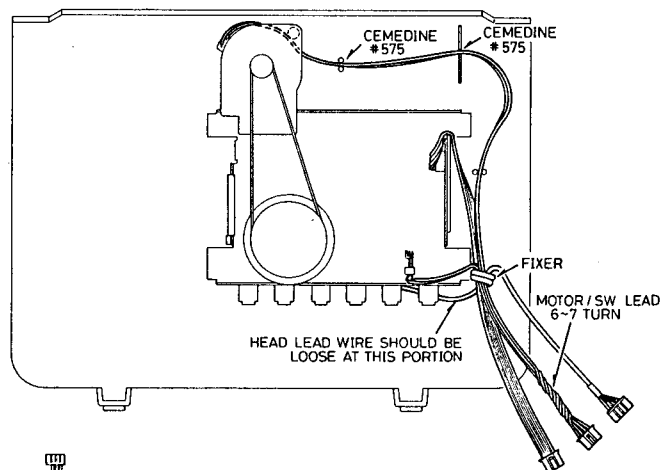
REMOVAL AND INSTALLATION

g. WIRING LAYOUT

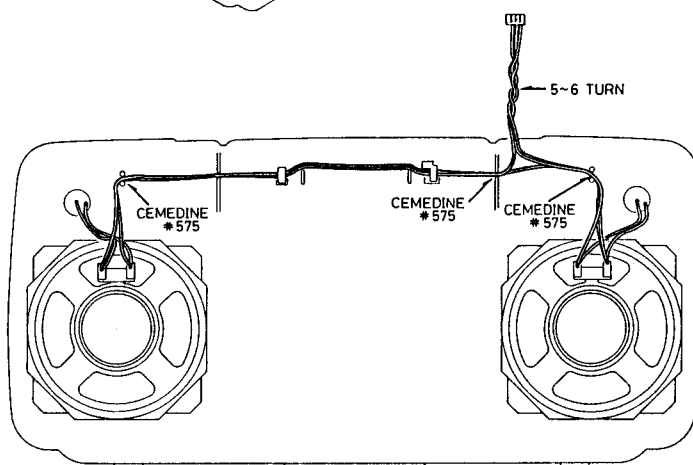
(a) ANTENNA



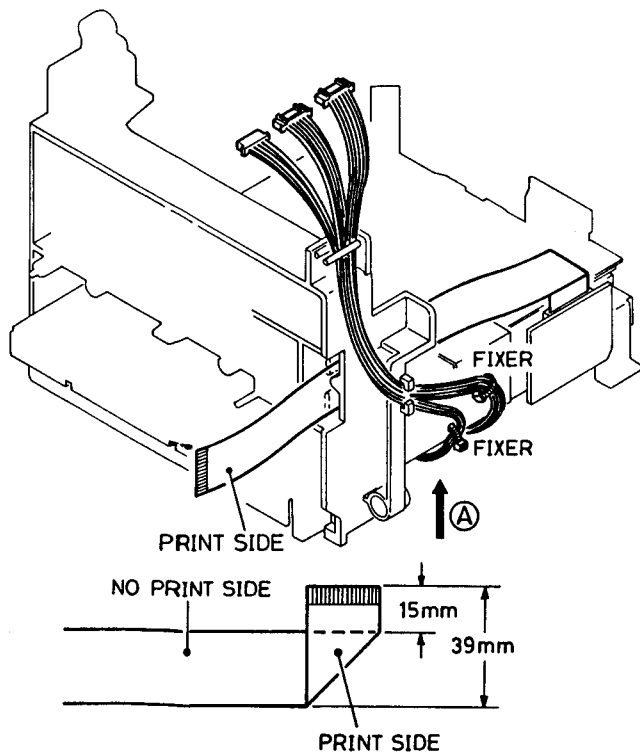
(b) TAPE MECHANISM



(c) SPEAKER

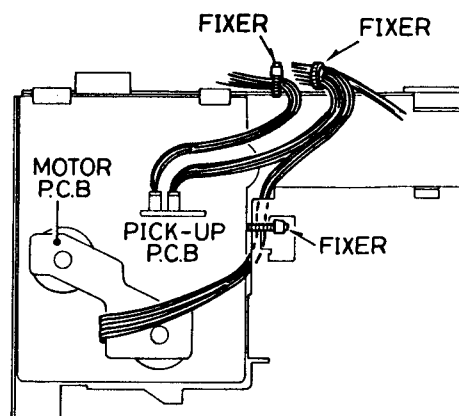


(d) CD CHANGER MECHANISM



- The CD changer mechanism and CD mechanism move forward and back, and to the left and right. Arrange the lead wires as shown in the diagram.

VIEW - A



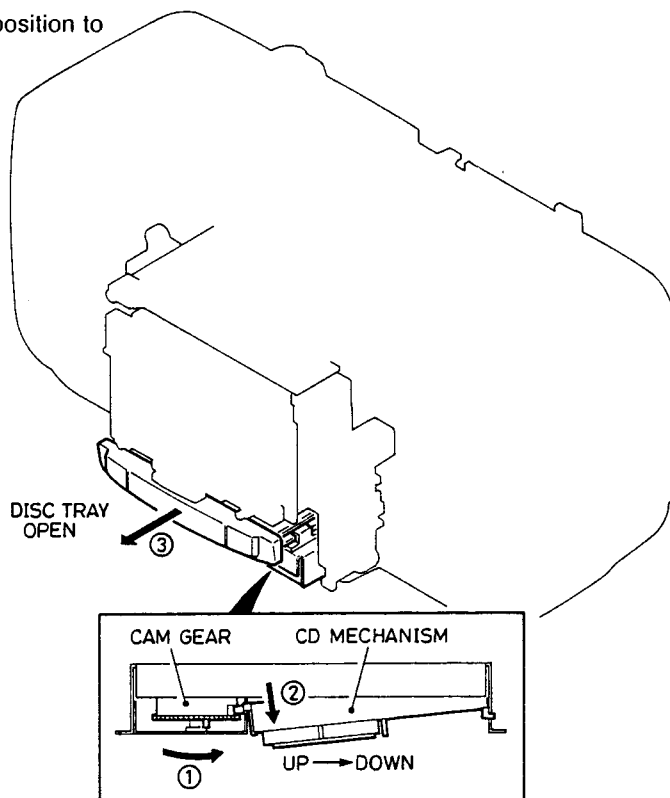
- Position the flexible P.C. board connected to the CD changer connector P.C. board so that it is not loose.

REMOVAL AND INSTALLATION

h. CD CHANGER MECHANISM

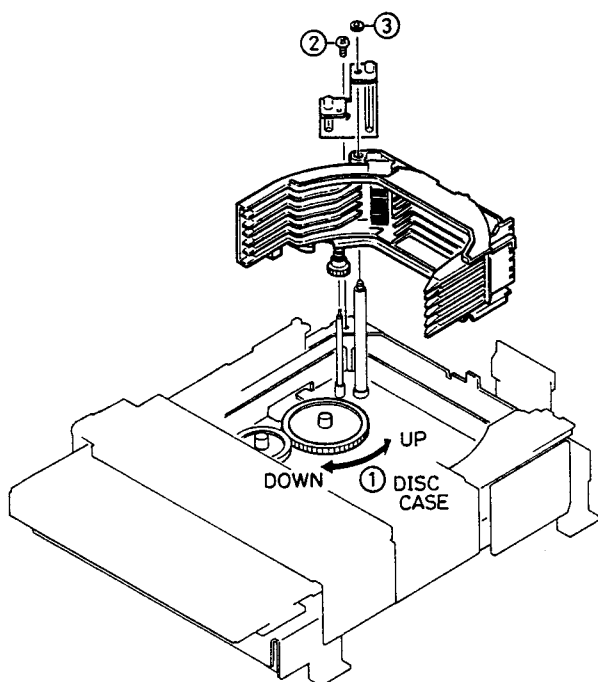
(a) TO OPEN THE DISC TRAY

- (1) Turn the cam gear counterclockwise. (①)
- (2) The CD mechanism move from the up position to the down position. (②)
- (3) Pull out the disc tray. (③)



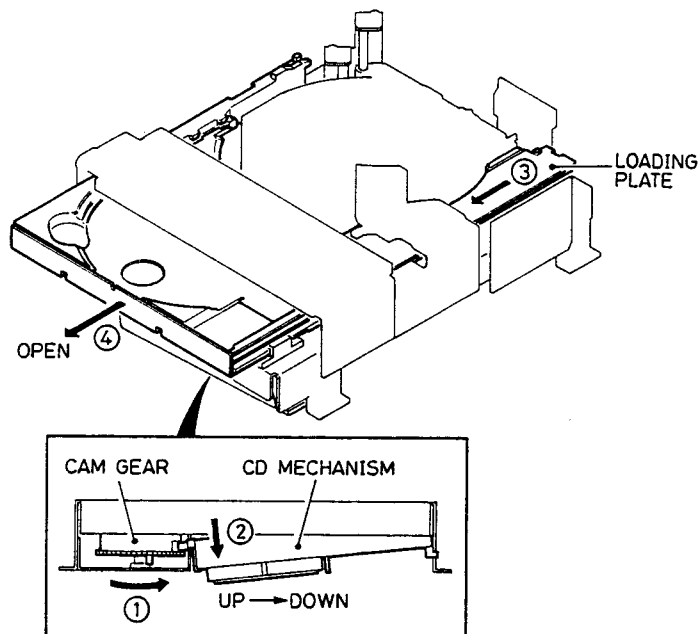
(b) REMOVING THE DISC CASE

- Follow steps ① through ③, in that order, to remove the disc case.



(c) PULLING OUT THE DISC TRAY

- (1) Move the CD mechanism to the down position. (①, ②)
- (2) Move the loading plate forward. (③)
- (3) Pull out the disc tray. (④)

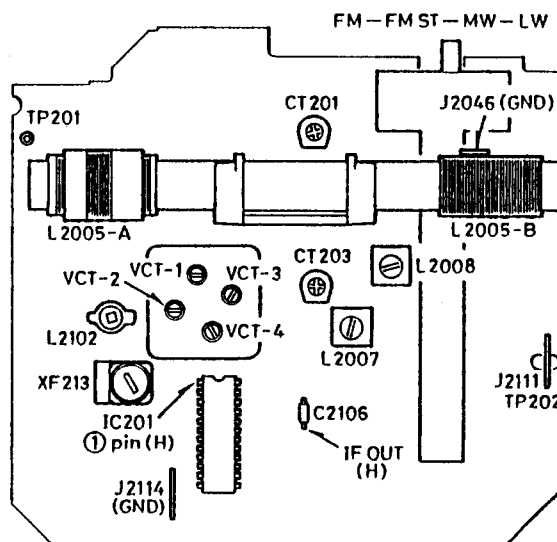


TUNER ADJUSTMENTS

- Use a plastic screw driver for adjustments.
- Adjust the intermediate frequency of MW and FM to the frequency of ceramic filter.

Supply voltage : DC 12.0 V
 Phones impedance : 32 ohm
 Standard output : 0.5 mW (126 mV)
 Function switch : RADIO

PARTS LOCATION



a. MW ADJUSTMENT BAND SELECT SWITCH : MW

Step	Adjusting Circuit	Connections		SG Frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	IF	Closed the output terminal by sweep generator, it place to L2005-B	Connect sweep generator to C2106 (H) & J2114 (G)	459 kHz	Low	XF213	
2	Tuning coverage	Connect AM SG to Test Loop	Connect VTVM to speaker terminals	515 kHz	Low end	L2007	Max.
3				1640 kHz	High end	VCT - 4	
4	Tracking	Connect AM SG to Test Loop	Connect VTVM to speaker terminals	600 kHz	600 kHz	L2005-B	Max.
5				1400 kHz	1400 kHz	VCT - 3	
6	Repeat adjustments						

b. LW ADJUSTMENT BAND SELECT SWITCH : LW

STEP 4: ADJUSTMENT: BAND SELECT SWITCH: 1. LW							
Step	Adjusting Circuit	Connections		SG Frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	Tuning coverage	Connect AM SG to Test Loop	Connect VTVM to speaker terminals	140 kHz	Low end	L2008	Max.
2				290 kHz	High end	CT203	
3	Tracking	Connect AM SG to Test Loop	Connect VTVM to speaker terminals	160 kHz	160 kHz	L2005-A	Max.
4				280 kHz	280 kHz	CT201	
5	Repeat adjustments						

c. FM ADJUSTMENT BAND SELECT SWITCH : FM FM Dummy antenna : 75 ohm unbalance

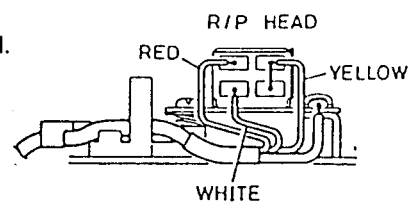
Step	Adjusting Circuit	Connections		SG Frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	IF	Connect sweep generator to IC201 ① (H) & J2046 (G)	Connect sweep generator to C2106 (H) & J2114 (G)	10.7 MHz	Low	—	
2	Tuning coverage	Connect FM SG to TP201(H) & J2046(G)	Connect VTVM to speaker terminals	87.35 MHz	Low end	L2102	Max.
3				108.3 MHz	High end	VCT-2	
4	Tracking	Connect FM SG to TP201(H) & J2046(G)	Connect VTVM to speaker terminals	106.0 MHz	106.0 MHz	VCT-1	Max.
5	Repeat adjustments						

TAPE DECK ADJUSTMENTS

a. HEAD REPLACEMENT AND HEAD AZIMUTH ADJUSTMENT

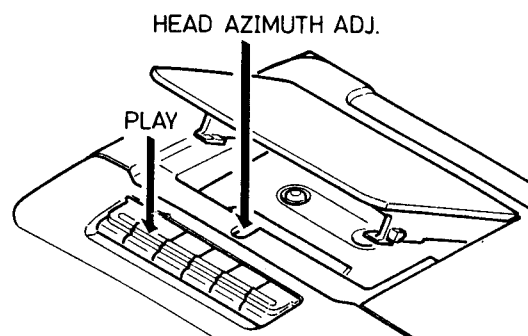
(a) HEAD REPLACEMENT

- After replacement, demagnetize the heads by using a degausser.
- Be sure to clean the heads before attempting to make any adjustments.
- All wiring should be returned to the original position after work is completed.



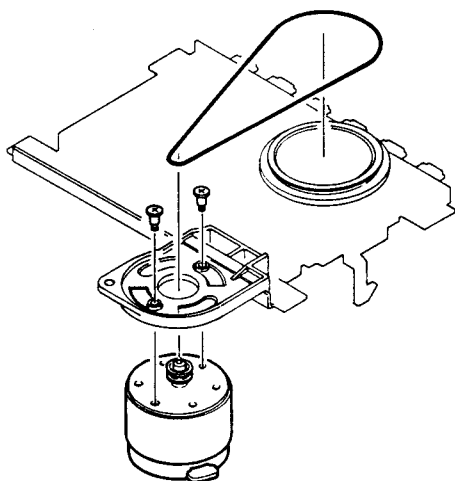
(b) HEAD AZIMUTH ADJUSTMENT

- (1) Load the test tape (VTT-703, etc., 10 kHz) for azimuth adjustment.
- (2) Press the **PLAY** button.
- (3) Use a cross-tip screwdriver to turn the screw for azimuth adjustment so that the left and right output are maximized.
- (4) Press the **STOP** button.
- (5) After completion of the adjustment, use thread lock (TB-1401B) to secure the azimuth-adjustment screw.



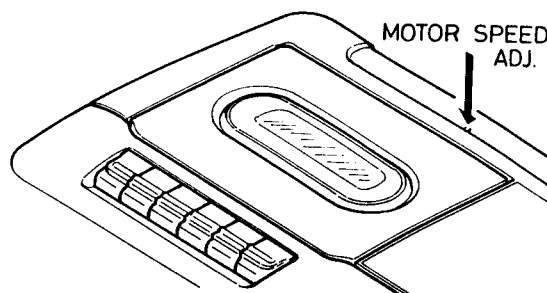
b. MOTOR REPLACEMENT AND SPEED ADJUSTMENT

(a) MOTOR REPLACEMENT



(b) MOTOR SPEED ADJUSTMENT

- (1) Insert the test tape (MTT-111N, etc., 3000 Hz).
- (2) Press the **PLAY** button.
- (3) Use a flat-tip screwdriver to turn the **SVR** (located inside the rear of the motor) to adjust **SVR** so that the frequency counter becomes 3,000 Hz.



c. CHECKING THE MECHANISM TORQUES AND TENSION

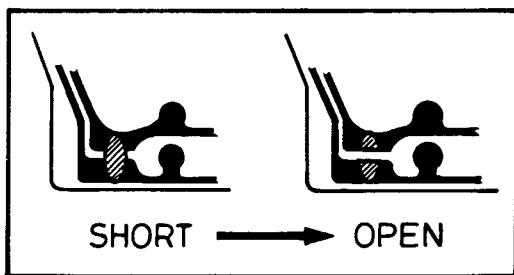
- Clean the head, capstan and pinch roller before making any measurement.

Measurement	Take-up torque	Back tension	Tape tension
Cassette for measurement	PLAY:TW-2111A F.FWD/REW:TW-2231	PLAY:TW-2111A	Drive-power cassette TW-2412
PLAY	30~ 60 gr.cm	2.0~ 4.5 gr.cm	60 gr or more
F.FWD	55~ 120 gr.cm	—	—
REW	55~ 120 gr.cm	—	—

CD PLAYER ADJUSTMENTS

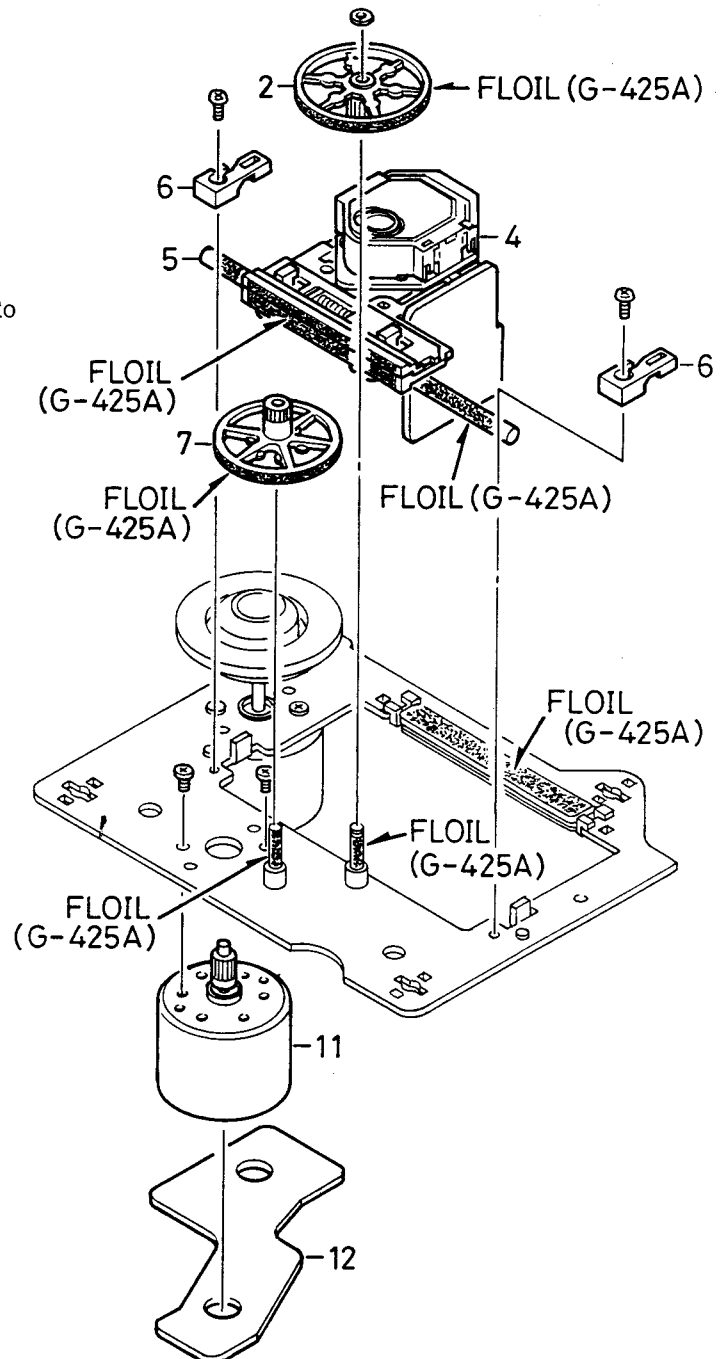
a. REPLACEMENT AND LUBRICATION OF THE PICK-UP

- (1) Remove the pick-up advance gear (2).
- (2) Remove the brackets (6) securing the pick-up rail in place.
- (3) Pull out the pick-up rail (5).
- (4) If the pick-up is reconditioned or replaced, be sure to wipe the rails clean and also apply a coating of **FLOIL (G-425A)** to their entire circumference and entire length.
- (5) After replacement, install the shaft as before.
- (6) The pick-up P.C.Board pattern is "**shorted**", as shown in the figure, so that the new pick-up will not be susceptible to the effects of static.
- (7) Set the pattern to "**open**" after the pick-up has been replaced.



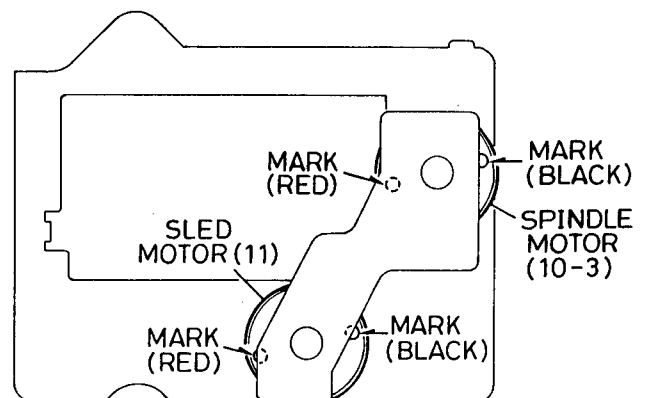
NOTE ;

- In order to prevent damage by static electricity during shipment, the indicated patterns on the pick-up P.C.Board are short-circuited by solder.
- After the pick-up replacement, remove the solder that is short-circuiting the patterns.



b. REPLACEMENT OF THE SLED MOTOR

- Check the position of the red mark on the bottom of the motor, as shown in the diagram.



c. LUBRICATION OF THE CD MECHANISM

- Be sure, at this time, not to touch any other part.
- NOTE : **FLOIL (G-425A)**

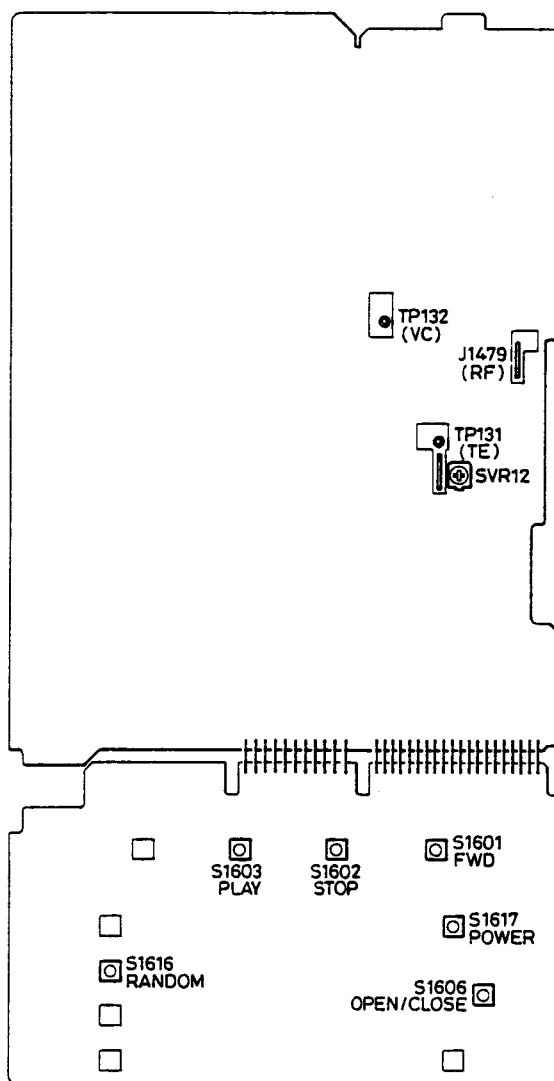
CD PLAYER ADJUSTMENTS

d. PREPARATIONS

(a) Measuring instruments, tools and filter

- (1) Test disc. : YEDS 18 (SONY) or etc.
- (2) Oscilloscope : SS5711 (10 MHz or dual-phenomenon)
or Memoryscope : DSS6521 (Storagescope)
- (3) Screwdrivers (non-metallic) for adjustments
- (4) Low Pass Filter (L.P.F.)
- (5) Resistor, Carbon 2.2 K ohm, 1/4W

e. PARTS LOCATION

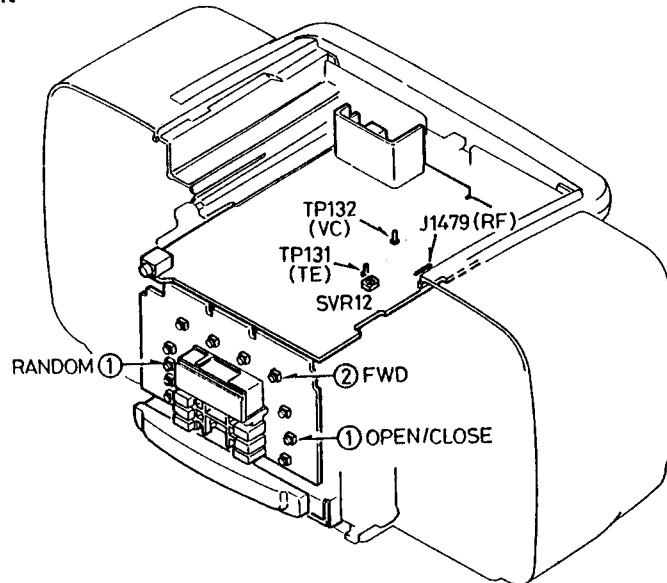


Adjustment Item	Measuring instrument	Service Mode	Input connection	Output connection	Adjustment location	Adjustment value
(a) Tracking balance	Oscilloscope L.P.F.	YES	—	TP 131 : TE TP 132 : VC	SVR12	Waveform symmetry A = B
(b) Checking the "eye" pattern	Oscilloscope	—	—	J1479 : RF TP 132 : VC	—	Check be sure that the "eye" pattern is at the center of the waveform and that the diamond shape is clearly defined

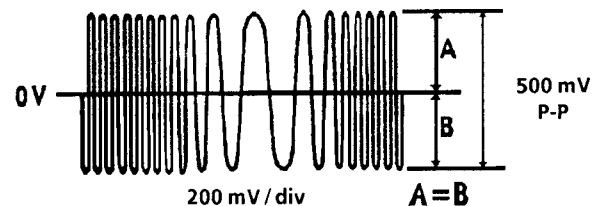
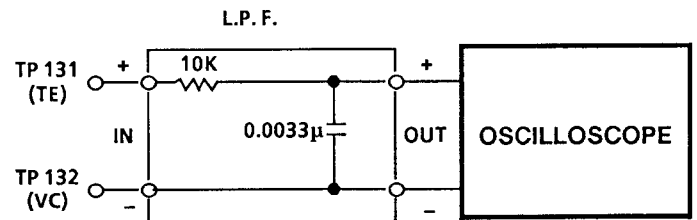
CD PLAYER ADJUSTMENTS

f. ADJUSTMENTS

(a) Tracking balance adjustment

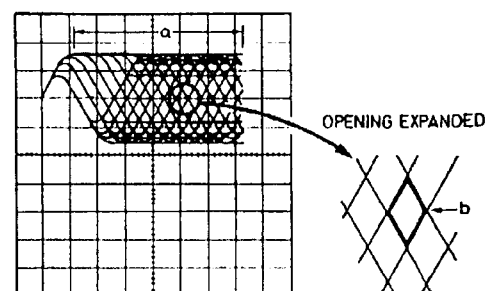
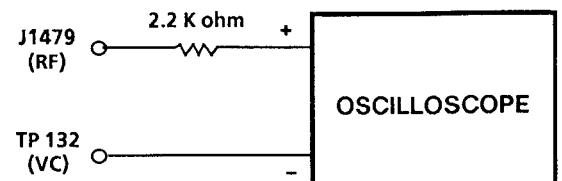


- (1) Within one second after pressing the **OPEN/CLOSE** and **RANDOM** switches at the same time, press the **FWD** switch. (**Service mode: TRACKING BALANCE**)
- (2) Connect an oscilloscope to TP131 (TE) and TP132 (VC).
- (3) Set the test disc.
- (4) PLAY switch push ON.
- (5) Adjust **SVR12** so that the oscilloscope's waveform is symmetrical, as shown in the illustration.
- (6) Switch OFF the POWER.



(b) Checking the "eye" pattern

- (1) Switch "ON" the POWER.
- (2) Connect an oscilloscope to J1479 (RF) and TP132 (VC).
- (3) Load the test disc.
- (4) PLAY switch push ON.
- (5) Check to be sure that the "eye" pattern is at the center of waveform and that the diamond shape is clearly defined.
- (6) Press the STOP button.
- (7) Switch "OFF" the POWER.



SERVICE MODE

The unit has four service modes.

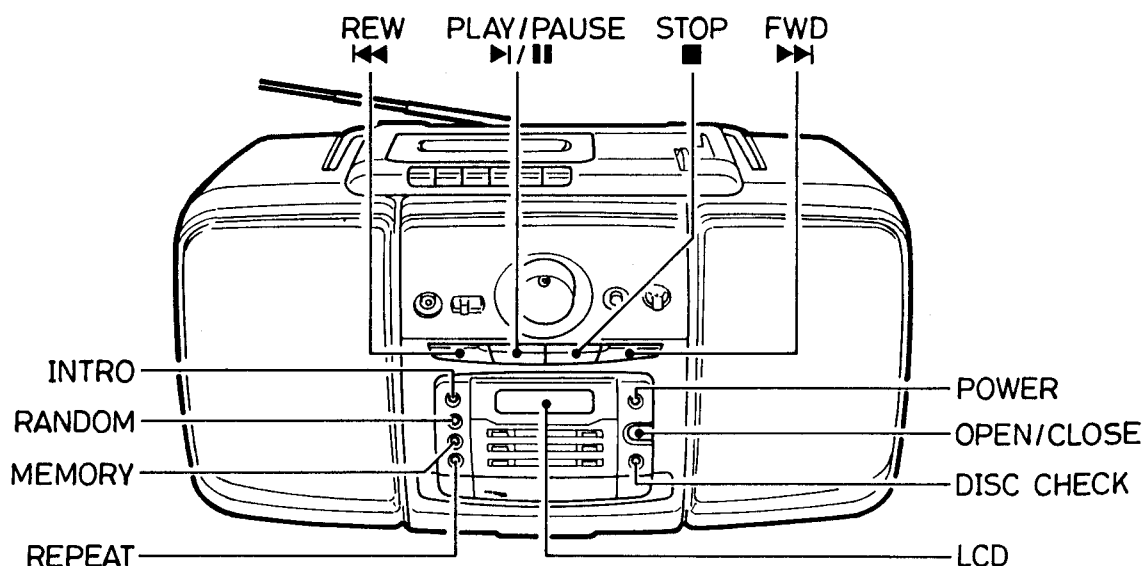
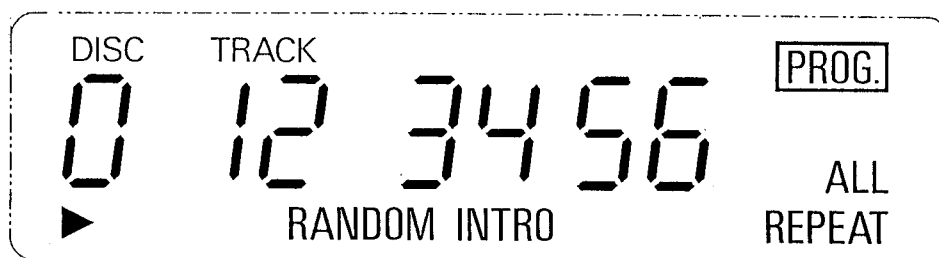
- After pressing the **OPEN/CLOSE** and **RANDOM** buttons at the same time, press one of the following buttons within **one second** to enter the corresponding service mode.

BUTTON	SERVICE MODE
PLAY / PAUSE	KEY WIRING CHECK
PLAY / PAUSE	LED AND LCD WIRING CHECK
FWD	CD BLOCK ADJUSTMENT MODE
OPEN / CLOSE	CD BLOCK OPERATION DISPLAY MODE

- To cancel the service mode, press the **POWER** button to switch "OFF" the power supply.

a. KEY WIRING CHECK

- After pressing the **OPEN/CLOSE** and **RANDOM** buttons at the same time, press the **PLAY/PAUSE** button within one second.
- The LEDs light and the LCD segments are displayed.



SERVICE MODE

- (3) Pressing a key toggles the corresponding LED or LCD display indication on and off.

Pressing the key when the indication is off turns it on, and pressing the key when the indication is on turns it off.

KEY INPUT	DISPLAY
REPEAT	REPEAT
MEMORY	PROG.
PLAY / PAUSE	▶
RANDOM	RANDOM
INTRO	INTRO
OPEN / CLOSE	ALL
POWER	OFF

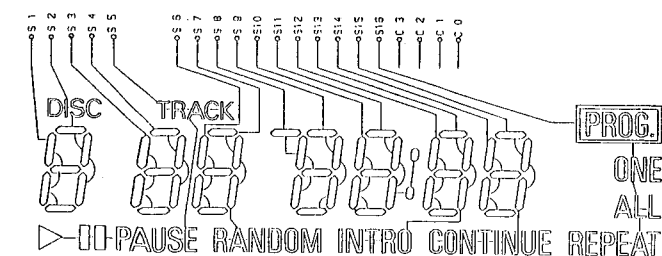
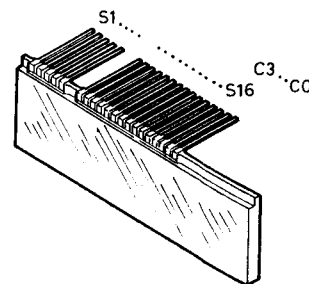
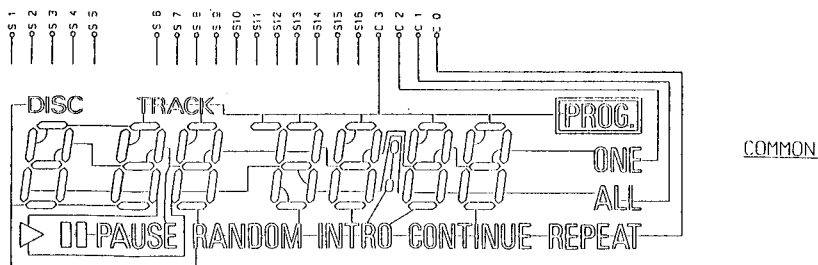
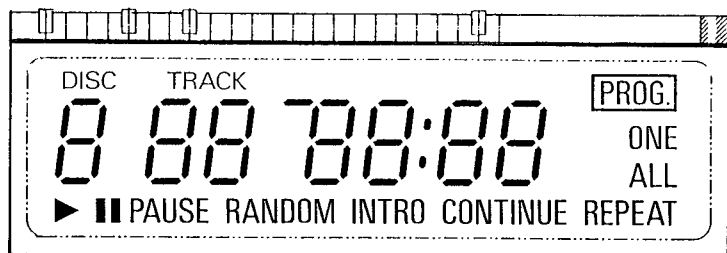
KEY INPUT	DISPLAY	
	LCD	LED
FWD	DISC	
BACK	TRACK	
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
DISC CHECK	DISC	●

- (4) Press the **POWER** button to switch "OFF" the power supply and cancel the service mode.

b. LED AND LCD WIRING CHECK

- After pressing the **OPEN/CLOSE** and **RANDOM** buttons at the same time, press the **PLAY/PAUSE** button within one second.
- Press the **STOP** button.
- All the LEDs light and all the LCD segments are displayed.

LCD DISPLAY



- (4) Press the **POWER** button to switch "OFF" the power supply and cancel the service mode.

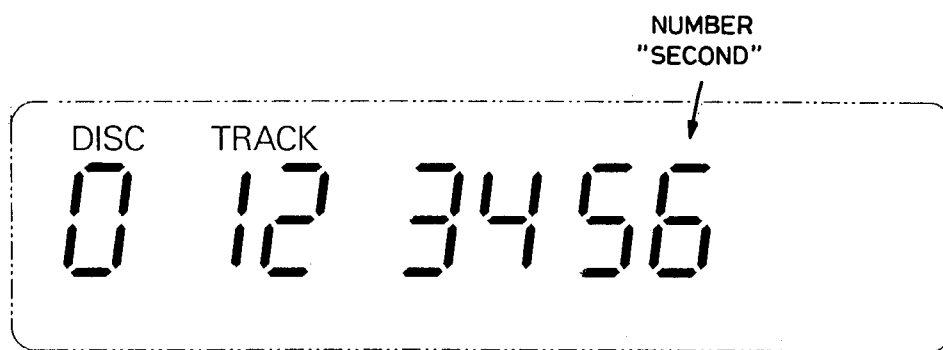
SERVICE MODE

c. CD BLOCK ADJUSTMENT MODE

- Refer to the section on CD block adjustments (pages 9 and 10).

d. CD BLOCK OPERATION DISPLAY MODE

- (1) After pressing the **OPEN/CLOSE** and **RANDOM** buttons at the same time, press the **OPEN/CLOSE** button within one second.
- (2) When the unit is in this service mode and the CD function is selected, the LCD numeric display indicates the current CD operation.
- (3) If a CD error occurs, a number is displayed in the seconds indication area. In addition, the CD operation indication is frozen from that point forward.
- (4) Press the **STOP** button when the unit is in the stop mode to unfreeze the indication.



CD ERROR CONDITION INDICATIONS

NUMBER	CD ERROR CONDITION
0	No error.
1	Focus failure during focus search.
2	No subcode received at disc startup.
3	Can't read TOC.
4	Focus lost during servo-on (during play, etc.).
5	No subcode received during servo-on (during play, etc.).
6	Tray-open not complete.
7	Tray-close not complete.
8	CD error
9	CD error (chucking failure).
A	Unload error (unload failure).

CD CHANGER MECHANISM OPERATION DESCRIPTION

- The unit is capable of loading up to six 12 cm CDs at once and playing them in sequence.
- Immediately before power is turned on (off status), it is in the home position.

Disc case : Disc 1 (top level)
 Turntable : Chucking
 Loading plate: Holding disc

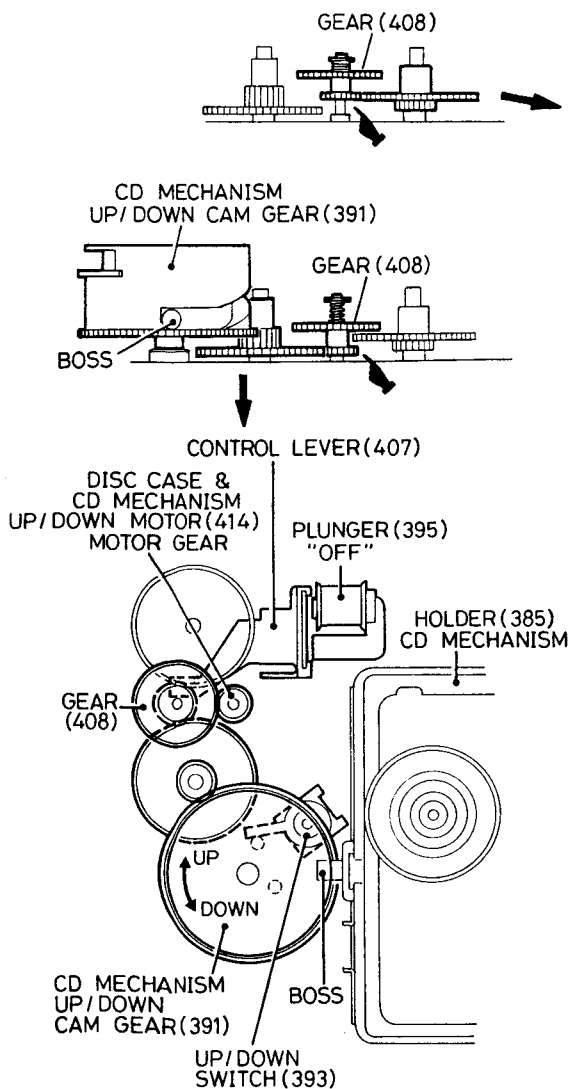
- When the unit is powered on with the CD function selected, chucking takes place on the CD that was programmed when the unit was last operated and the unit enters the standby mode.

a. UP/DOWN OPERATION OF THE CD MECHANISM AND DISC CASE

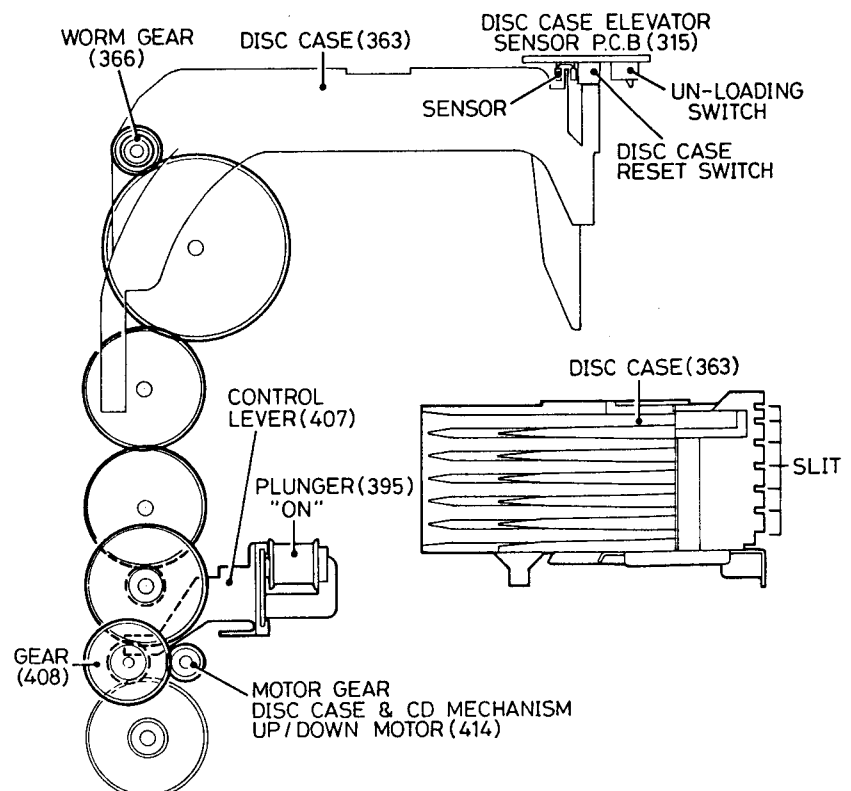
- Normally, the UP/DOWN MOTOR (414) of the disc case and CD mechanism turns the up/down cam gear (391) of the CD mechanism in a clockwise direction, causing the up/down switch (393) to move to the "up on" position. This puts the turntable into chucking status.

- (1) When the OPEN/CLOSE button is pressed, the cam gear (391) turns counterclockwise, putting the turntable into the down position. (CD mechanism: down.)
- (2) When the plunger (395) operates, it turns the worm gear (366), using the gear (408) as a junction. This causes the disc case to move up or down.
- (3) The rear of the disc case is equipped with slits (the protrusions to the right of 363) and switches, which cause a disc case stop signal to be generated.

CD MECHANISM UP / DOWN OPERATION



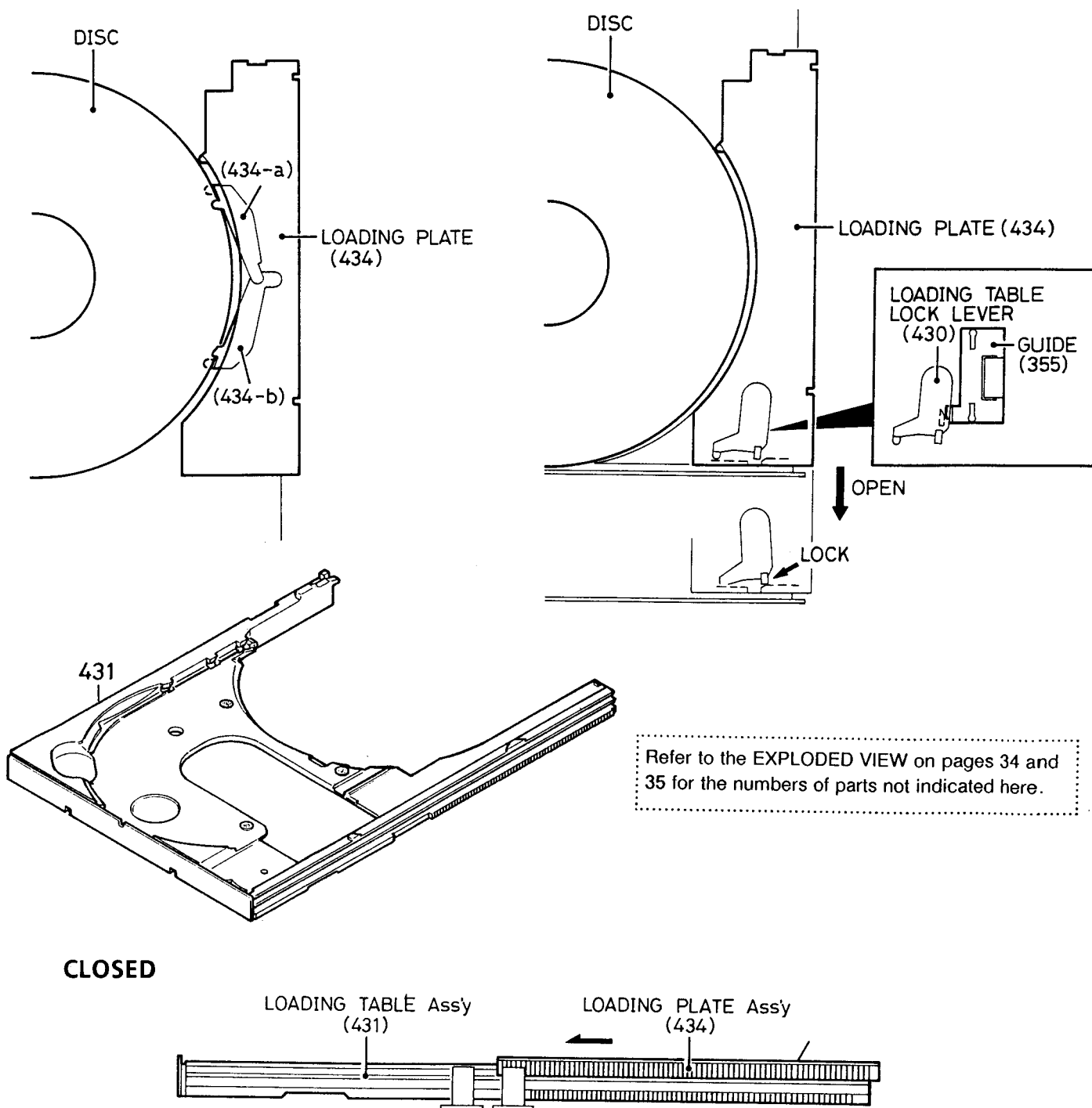
DISC CASE UP / DOWN OPERATION



CD CHANGER MECHANISM OPERATION DESCRIPTION

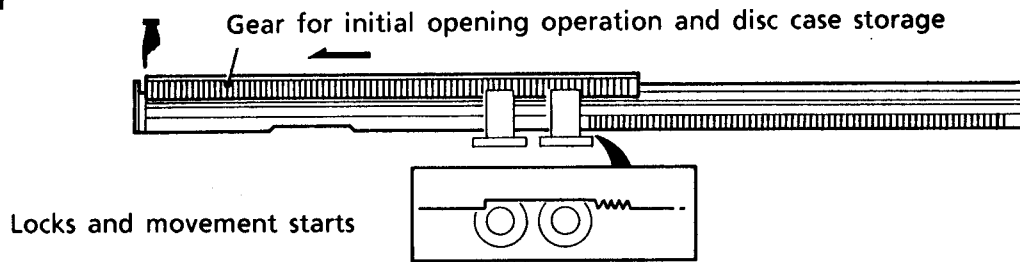
b. LOADING PLATE MOTION → "OPEN"

- The loading motor (377) runs, and the loading plate (434) starts moving toward the "OPEN" position, performing the following operations.
 - (1) Using hooks **a** and **b** on the loading plate (434), the CD is extracted and moved from the disc case (363).
 - (2) When it is over the turntable, hooks **a** and **b** separate from the CD and retract into the loading plate.
The CD is now **"FREE"** on top of the loading table.
 - (3) Next, the loading plate moves further and, by pressing on the loading table (431), moves the loading table lock lever (430).This causes it to link with the loading table and advance toward the **"OPEN"** position.

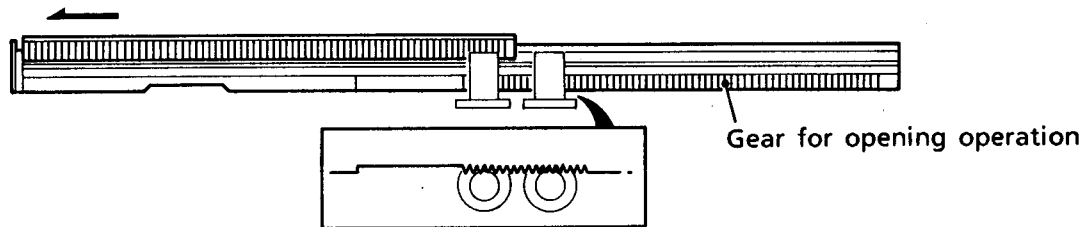


CD CHANGER MECHANISM OPERATION DESCRIPTION

DURING PLAY



OPEN



- At initial docking, the plate gear moves the tray, then movement is continued by the opening gear.

c. LOADING TABLE MOVEMENT → "OPEN"

- As it moves, the loading table performs the following operations.
 - (1) It removes the binder from the centering hold lever (322).
 - (2) It moves the cover plates (425, 427) so that the disc stopper (424) rises up and stabilizes the disc setting.
 - (3) It sets the OPEN/CLOSE switch (399) to the "OPEN ON" position.

d. LOADING TABLE MOVEMENT → "CLOSE"

- After putting the disc in place and pushing the loading table (431) with your hand, the OPEN/CLOSE switch moves to the "OFF" position, the loading motor reverses, and the loading table begins to move, performing the following operations.
 - (1) It lowers the disc stopper (424).
 - (2) When the disc sensors (345, 450) are triggered, the turntable starts up after operation (3), and the TOC is read.
 - (3) The loading table guide (355) disengages the loading table lock lever (430).
This undoes the link between the loading table and loading plate.

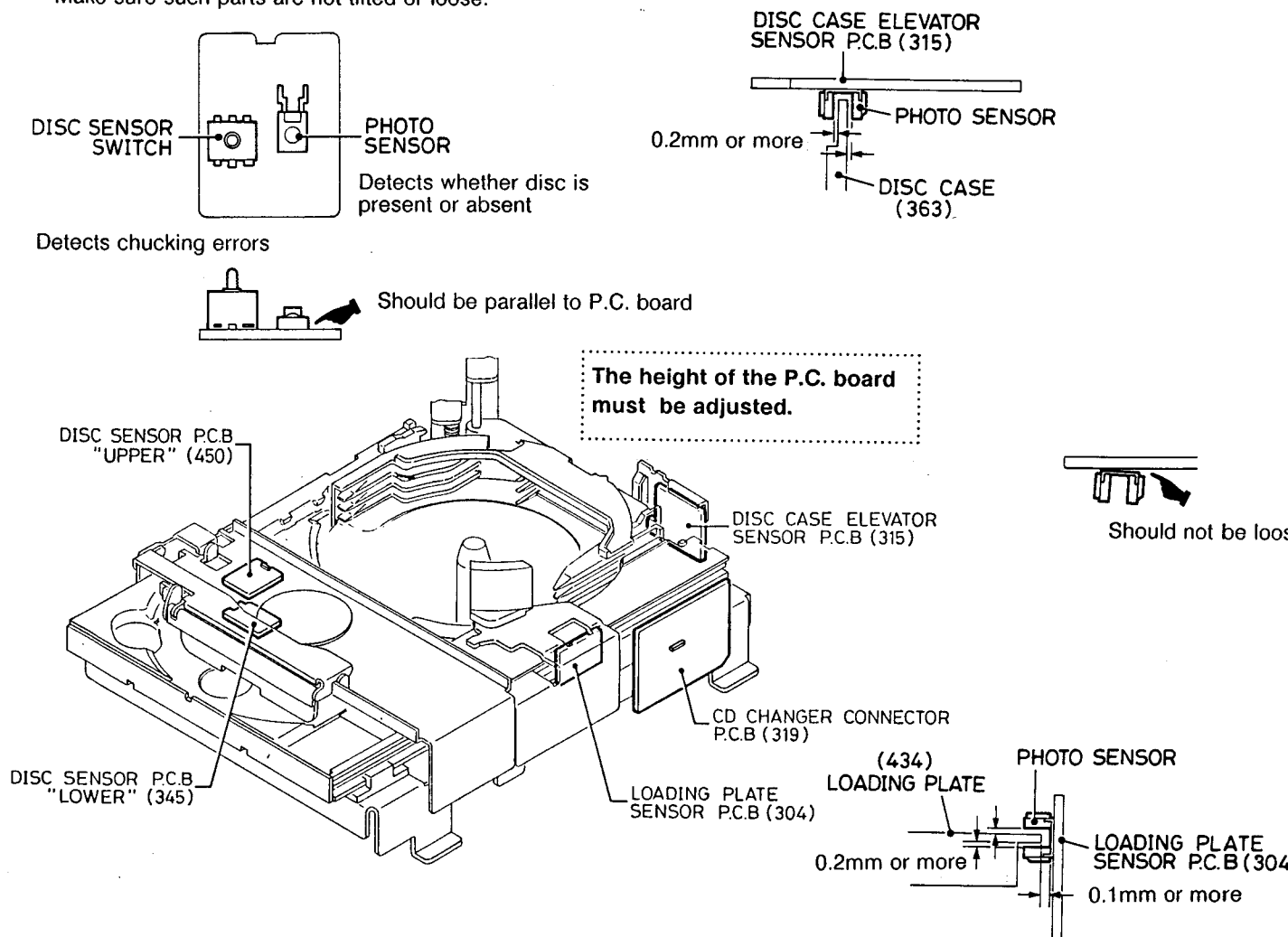
e. LOADING PLATE MOVEMENT → "CLOSE"

- The loading motor moves the "FREE" loading plate toward the "CLOSE" position, causing it to perform the following operations.
 - (1) It inserts a CD into the disc case and moves the loading completed switch (314) to the "OFF" position.
 - (2) Hooks a and b on the loading plate clamp the CD.
 - (3) Press the POWER button to switch off the power supply and cancel the service mode.

REPLACING THE PRINCIPAL PARTS OF THE CD CHANGER MECHANISM

a. SENSOR P.C. BOARD LAYOUT DIAGRAM AND ITS APPLICATION

- The CD changer mechanism employs four sensor P.C. boards.
 - Observe the following precautions to prevent sensor malfunctions.
- (1) Mount light-emitting and light-receiving elements on the P.C. boards in their correct positions.
Make sure such parts are not tilted or loose.

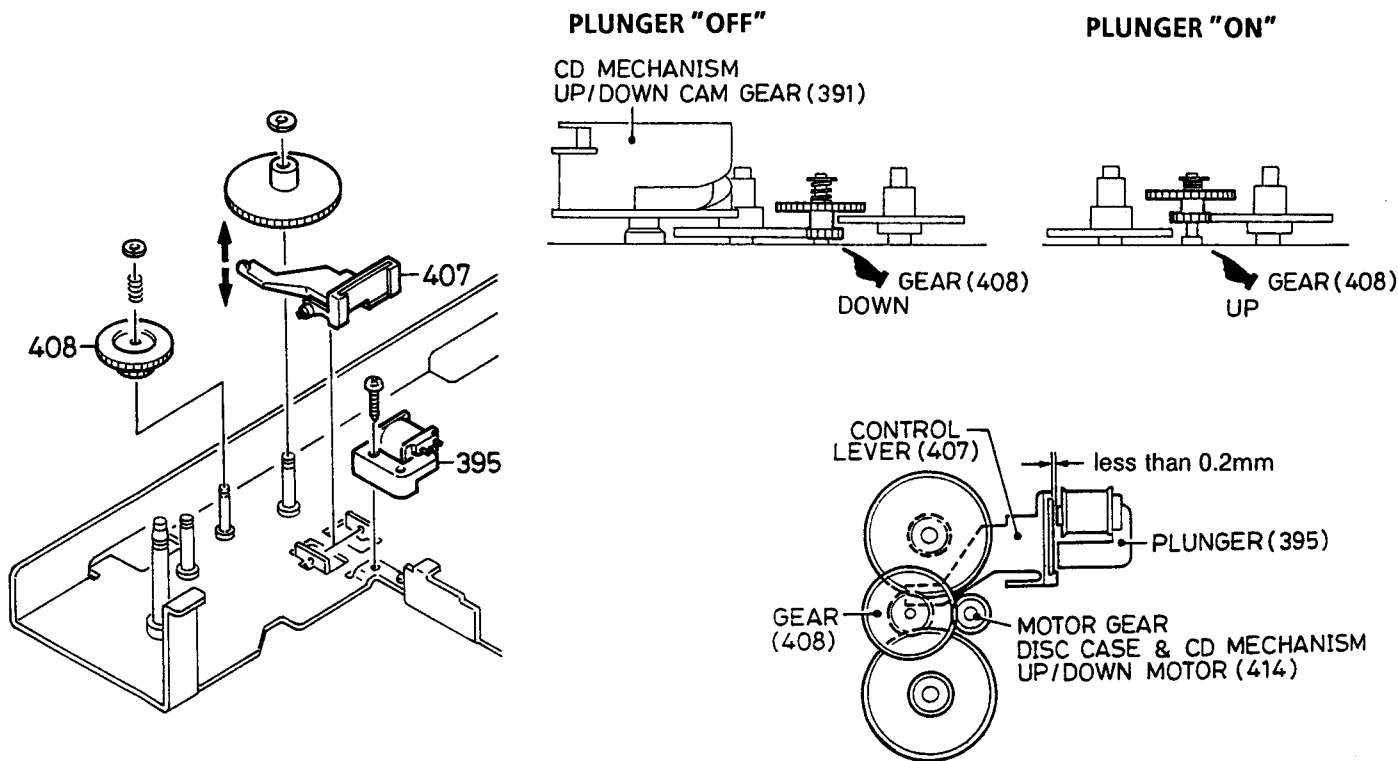


No.	P.C.BOARD NAME	DESCRIPTION
304	LOADING PLATE SENSOR P.C.B	• Detects the loading status by monitoring the movement of the loading plate (434).
345 450	DISC SENSOR P.C.B "LOWER" DISC SENSOR P.C.B "UPPER"	These sensors detect the following conditions on SENSOR P.C. boards 345 and 450. • Disc present or absent (PC002/PC003) • Chucking error (S005)
315	DISC CASE ELEVATOR SENSOR P.C.B	• Detects whether DISC CASE is in UP or DOWN position (PC001). • Detects when DISC CASE is in RESET position (S001). • Detects when loading plate (434) is in RESET position (S002).

REPLACING THE PRINCIPAL PARTS OF THE CD CHANGER MECHANISM

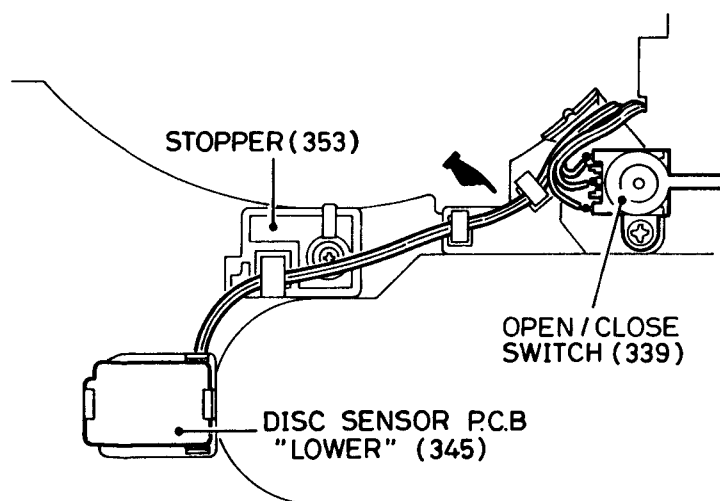
b. REPLACING THE PLUNGER

- Turn the plunger "ON" and "OFF", and confirm that the position of the control lever (407) and gear (408) change.
- To prevent improper movement of the tip of the control lever (407), confirm that it has no grease on it.



c. MOUNTING THE STOPPER AND ARRANGING THE LEAD WIRES

- Confirm that the hook on the stopper (353) is not bent.



Arrange the lead wires so that they do not stick out from the chassis.

This will prevent them from getting caught when the disc tray opens and closes.

- Use the BOND (#1616) to secure the stopper in place.

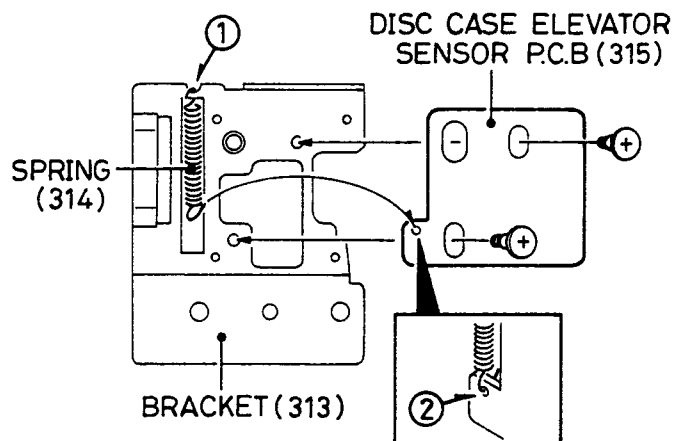
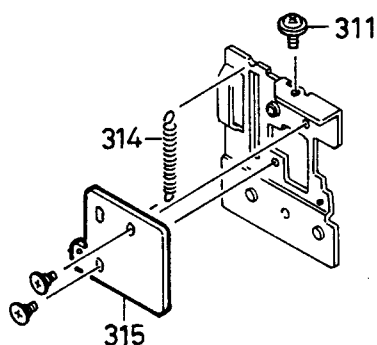
REPLACING THE PRINCIPAL PARTS OF THE CD CHANGER MECHANISM

d. REPLACING THE DISC CASE ELEVATOR SENSOR P.C.BOARD (315)

- This P.C. board performs a very important function, as it must monitor the up, down, and loading status of the disc case.
- When replacing the P.C. board, be very careful so as not to adversely affect any of the other parts.

(a) REPLACING THE P.C. BOARD (315)

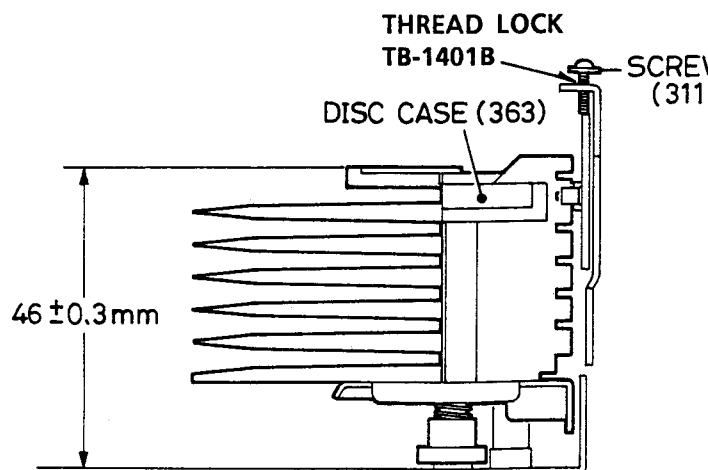
- Follow steps ① and ② below, in that order, to install the spring coil (314).
- Make sure not to install the spring coil backwards.



(b) P.C.BOARD HEIGHT ADJUSTMENT

- (1) Set the POWER switch to the "ON" position and the FUNCTION switch to the "CD" position.
- (2) Press the DISC 1 button.
The disc case lowers into position for the first disc.
- (3) Adjust the P.C.board height adjustment screw so that the distance between the disc case and the chassis is 46.0 ± 0.3 mm.
- (4) Next, press the DISC 6 button.
- (5) Once again, press the DISC 1 button.
- (6) Set the POWER switch to the "OFF" position and wait about 15 seconds.
- (7) Set the POWER switch to the "ON" position.
- (8) Confirm that the distance between the disc case and the chassis is 46.0 ± 0.3 mm.
- (9) If the distance is not 46.0 ± 0.3 mm, repeat steps (2) through (8).
- (10) After adjustments are complete, apply thread lock (TB-1401B) to the screw (311).

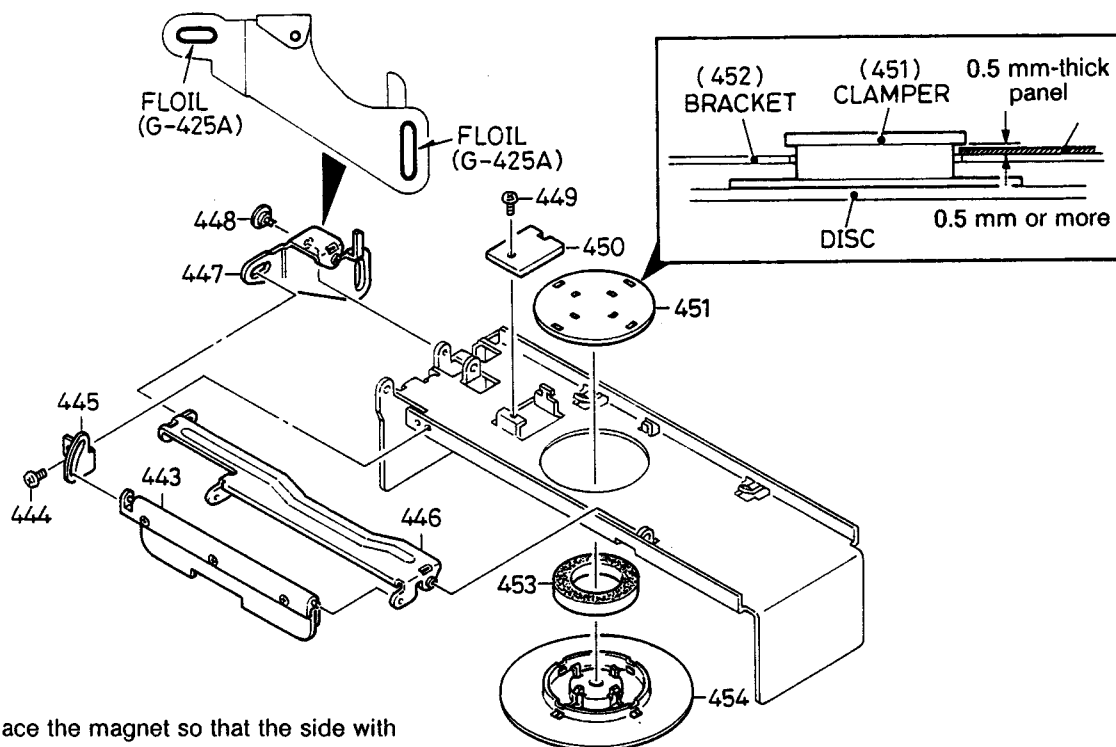
- After adjusting the height, apply screw lock to the screw (311).



REPLACING THE PRINCIPAL PARTS OF THE CD CHANGER MECHANISM

e. REPLACING THE CHUCKING CLAMPER

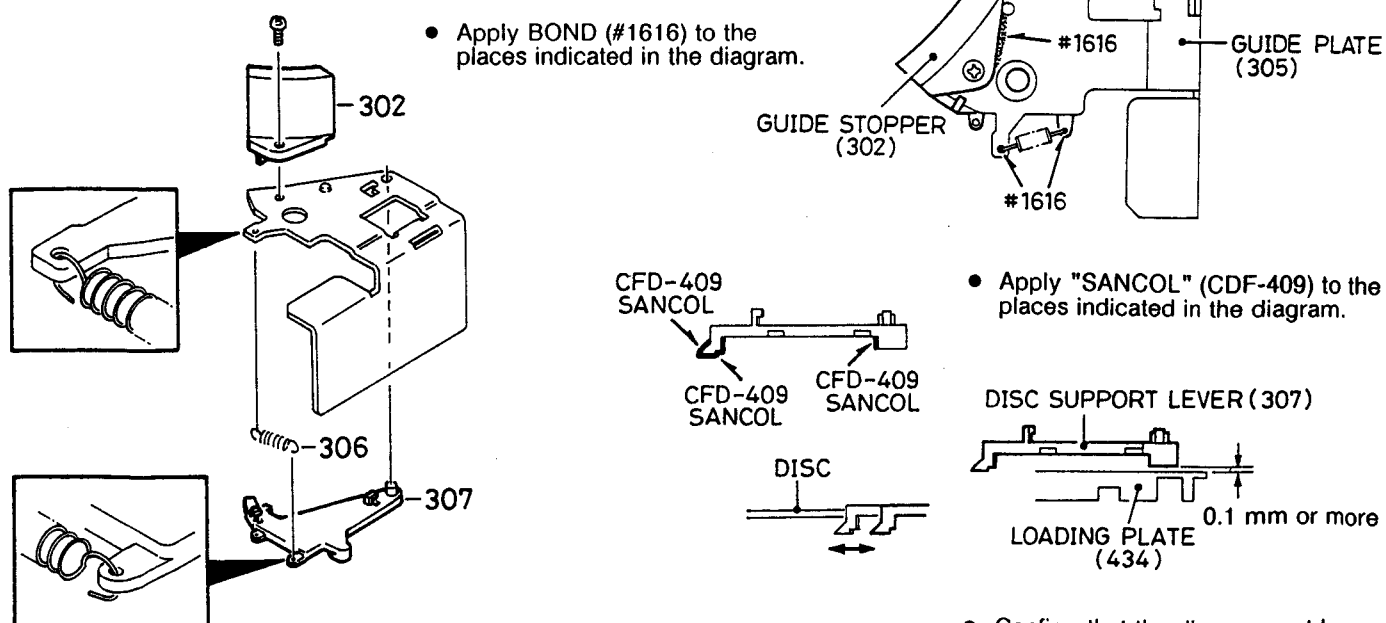
- Confirm that, during chucking, there is a gap of 0.5 mm or more between the clumper and bracket, and that the CD rotates smoothly.
- Apply a small amount of FLOIL (G-425A) to the lever (447) areas indicated in the diagram.



- Place the magnet so that the side with the coloring applied is on top.

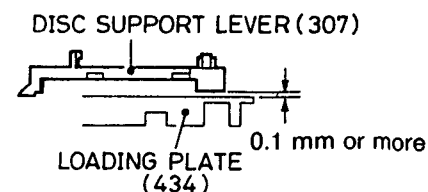
f. MOUNTING THE DISC SUPPORT LEVER (307)

- Hook on the spring coil (306) from the top end.



- Apply BOND (#1616) to the places indicated in the diagram.

- Apply "SANCOL" (CDF-409) to the places indicated in the diagram.



- Confirm that the disc support lever moves smoothly.

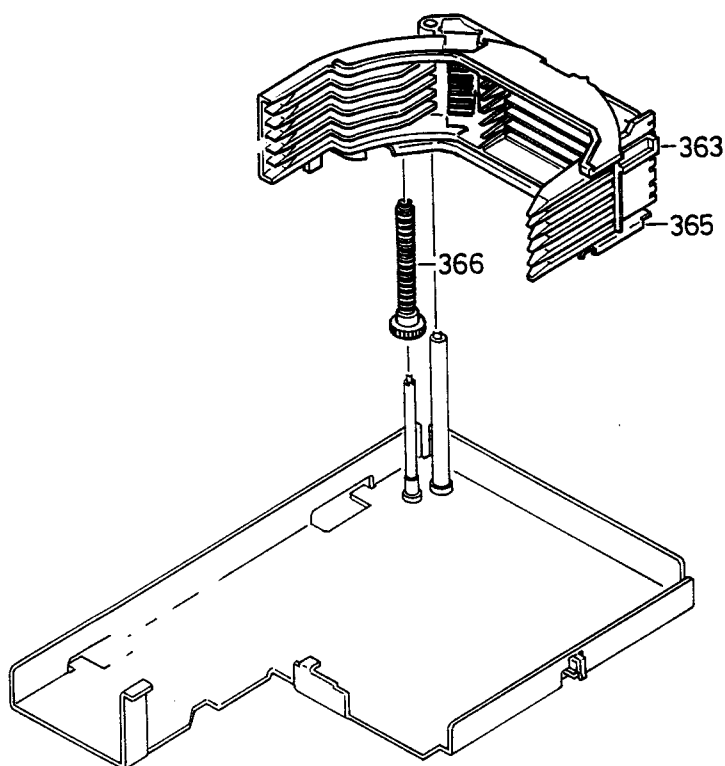
- After attaching the spring coil (306), apply BOND to the hooks to secure them.

REPLACING THE PRINCIPAL PARTS OF THE CD CHANGER MECHANISM

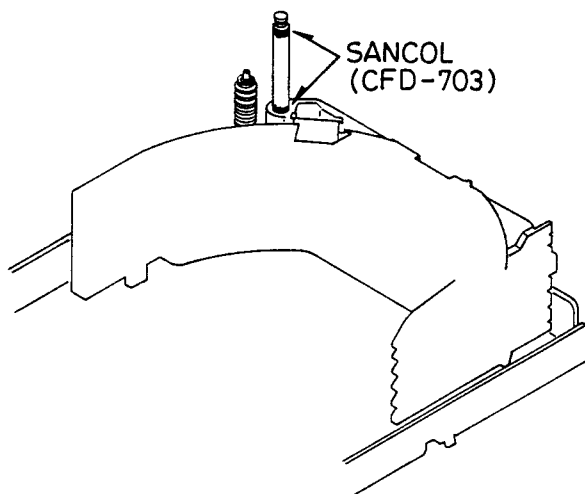
g. APPLYING GREASE

- Apply small amounts of grease to the designated areas to ensure proper changer operation.

(a) WORM GEAR (366), DISC CASE GUIDE SHAFT

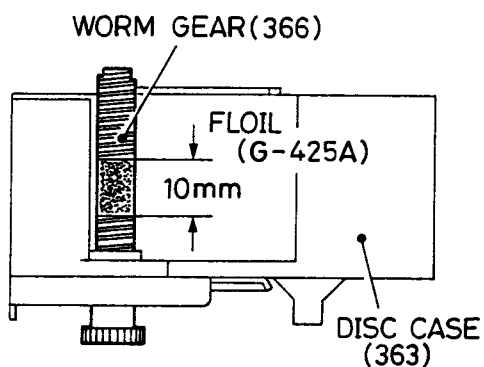


- Apply "SANCOL" (CFD-703) to the disc case guide shaft.



- Also apply "SANCOL" (CFD-703) to the gap between the disc case and the disc case guide shaft.

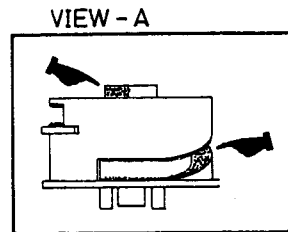
- Apply FLOIL (G-425A) to the center portion (about 10 mm) of the worm gear (366).



REPLACING THE PRINCIPAL PARTS OF THE CD CHANGER MECHANISM

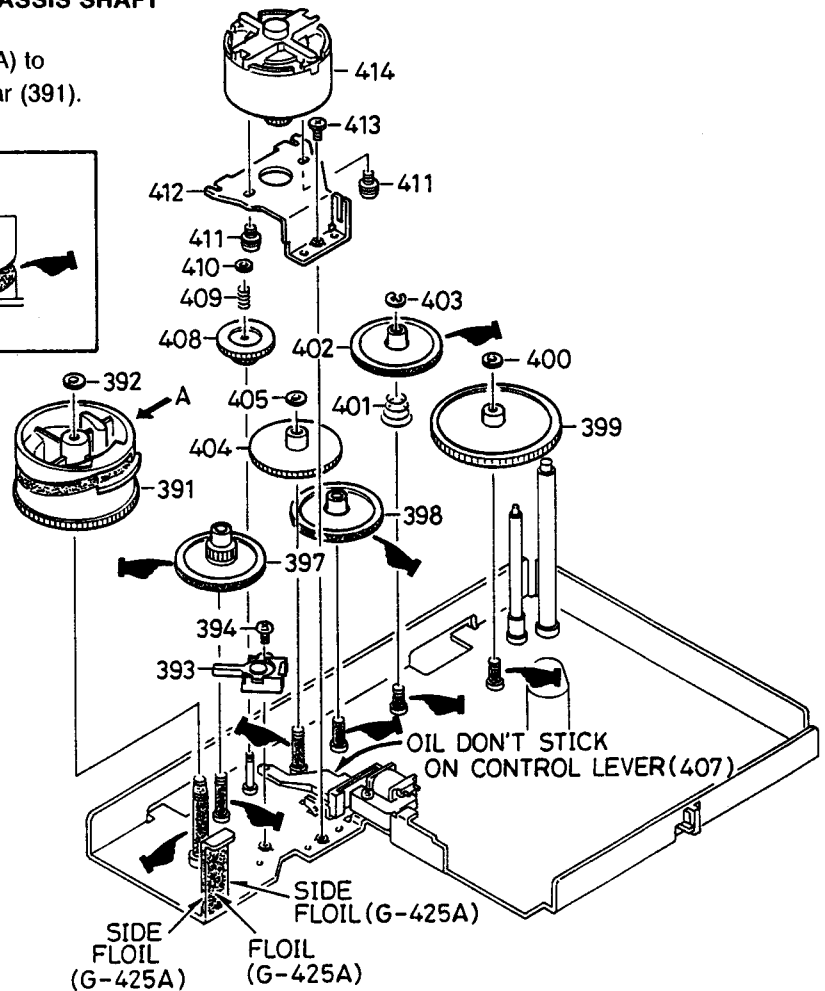
(b) GEARS (397, 398, 402), CAM GEAR (391), CHASSIS SHAFT

- As shown in the diagram, apply FLOIL (G-425A) to only one half of the top surface of the cam gear (391).

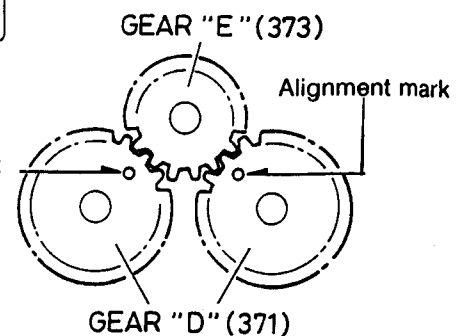
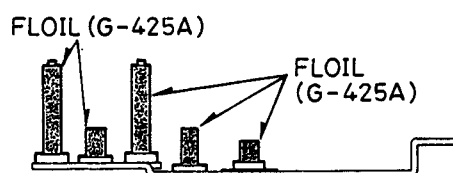
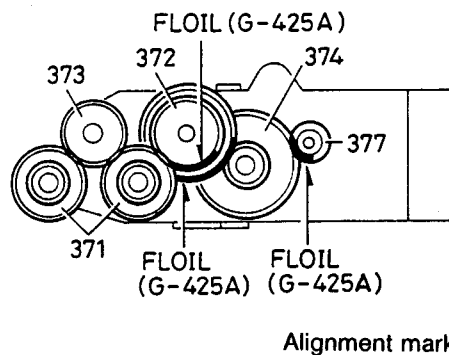
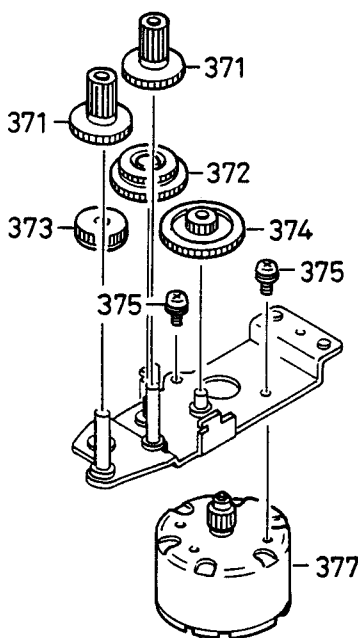


- Apply FLOIL (G-425A) to the area indicated by the

- Do not apply grease to the lever (407) to prevent the plunger from malfunctioning.



(c) MOUNTING THE LOADING GEAR (371)



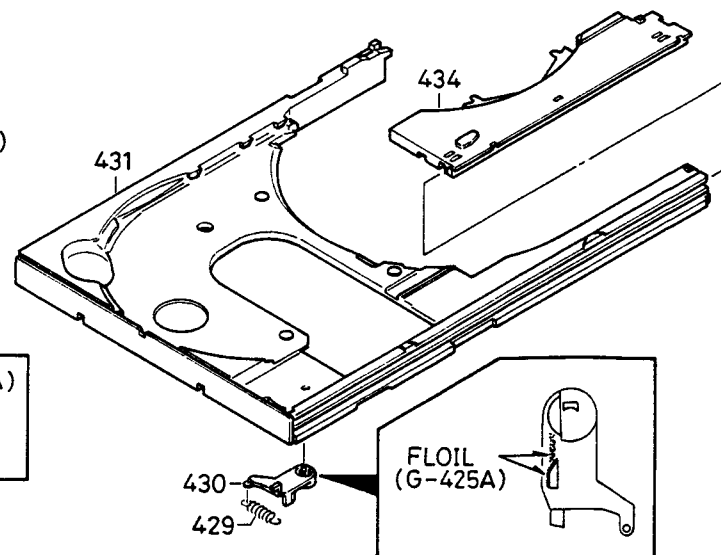
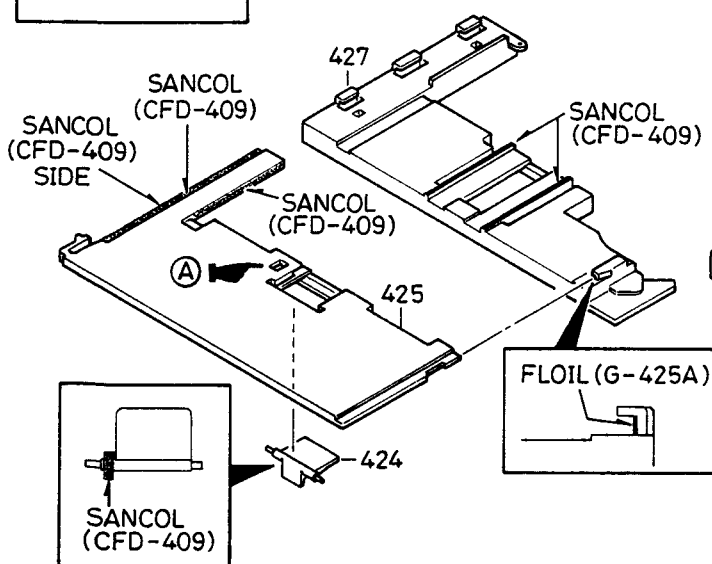
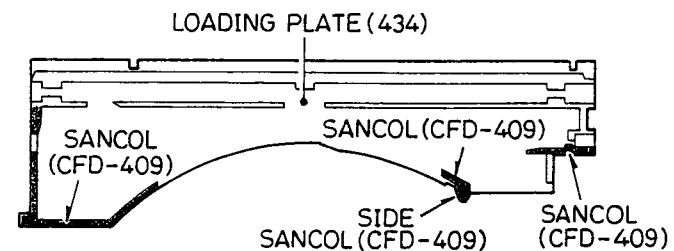
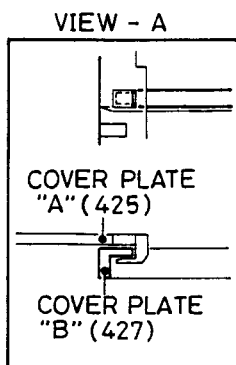
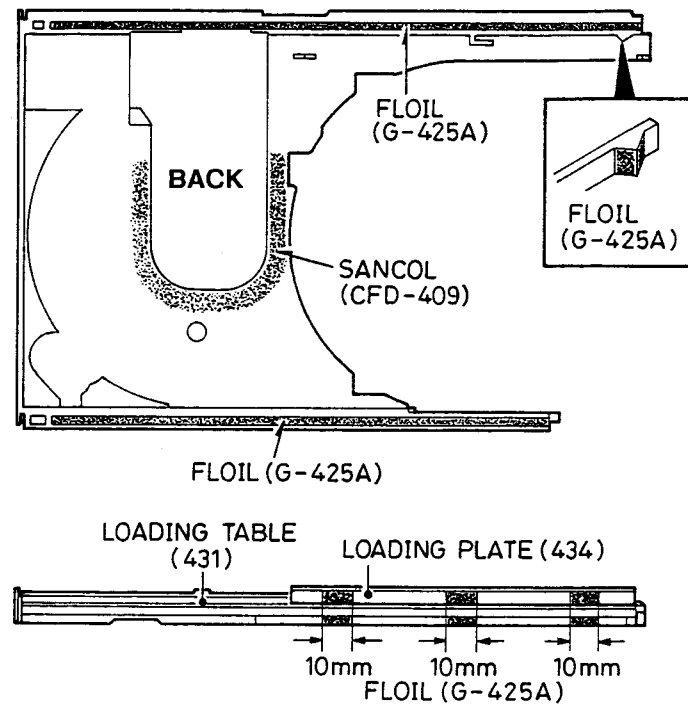
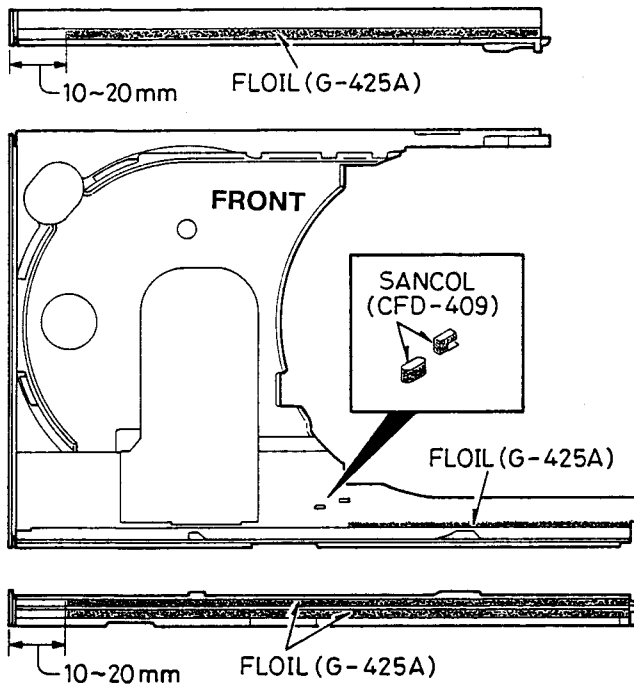
- Apply FLOIL (G-425A) to the five shafts.

- There should be four gear teeth between the two alignment marks.

REPLACING THE PRINCIPAL PARTS OF THE CD CHANGER MECHANISM

(d) LOADING TABLE (431), LOADING PLATE (434), COVERS (425, 427), etc.

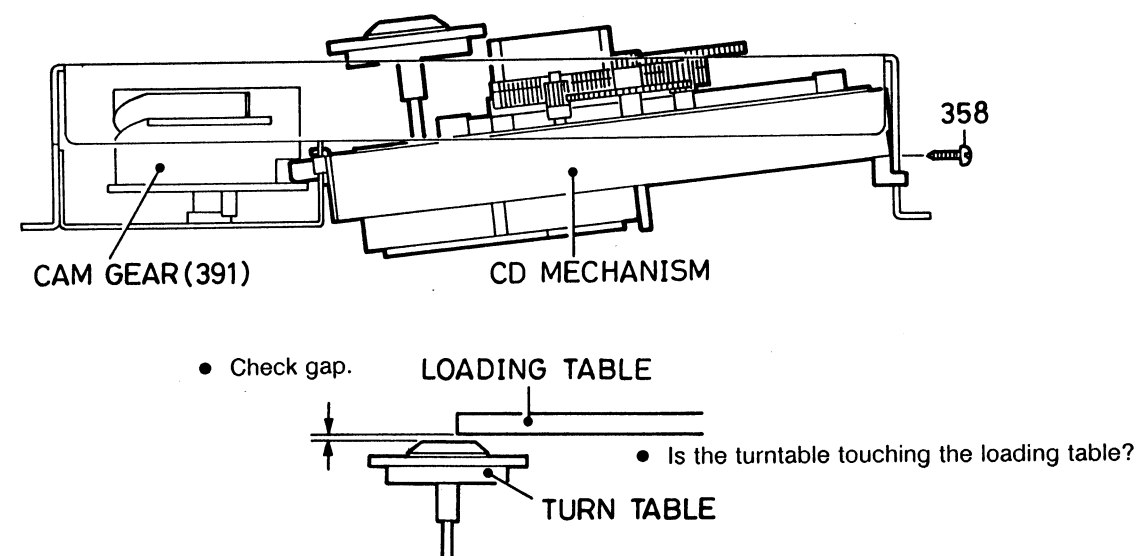
- Apply FLOIL (G-425A) and "SANCOL" (CFD-409) to the places indicated in the diagram, taking care not to confuse the two.



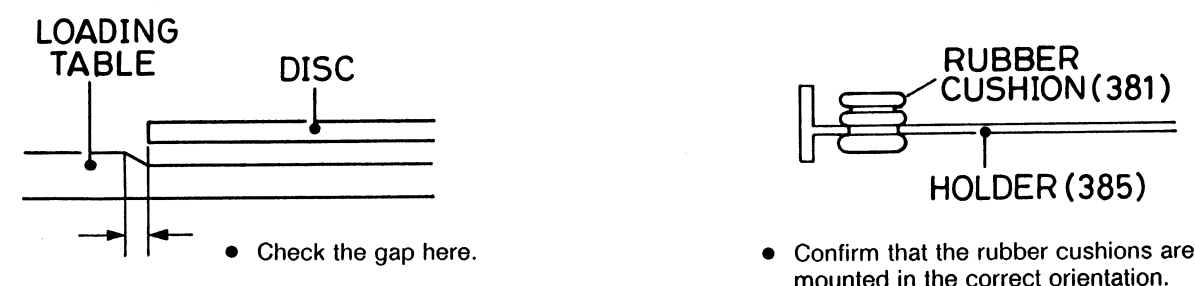
REPLACING THE PRINCIPAL PARTS OF THE CD CHANGER MECHANISM

h. PRECAUTIONS WHEN ASSEMBLING THE CD CHANGER MECHANISM AND CD MECHANISM

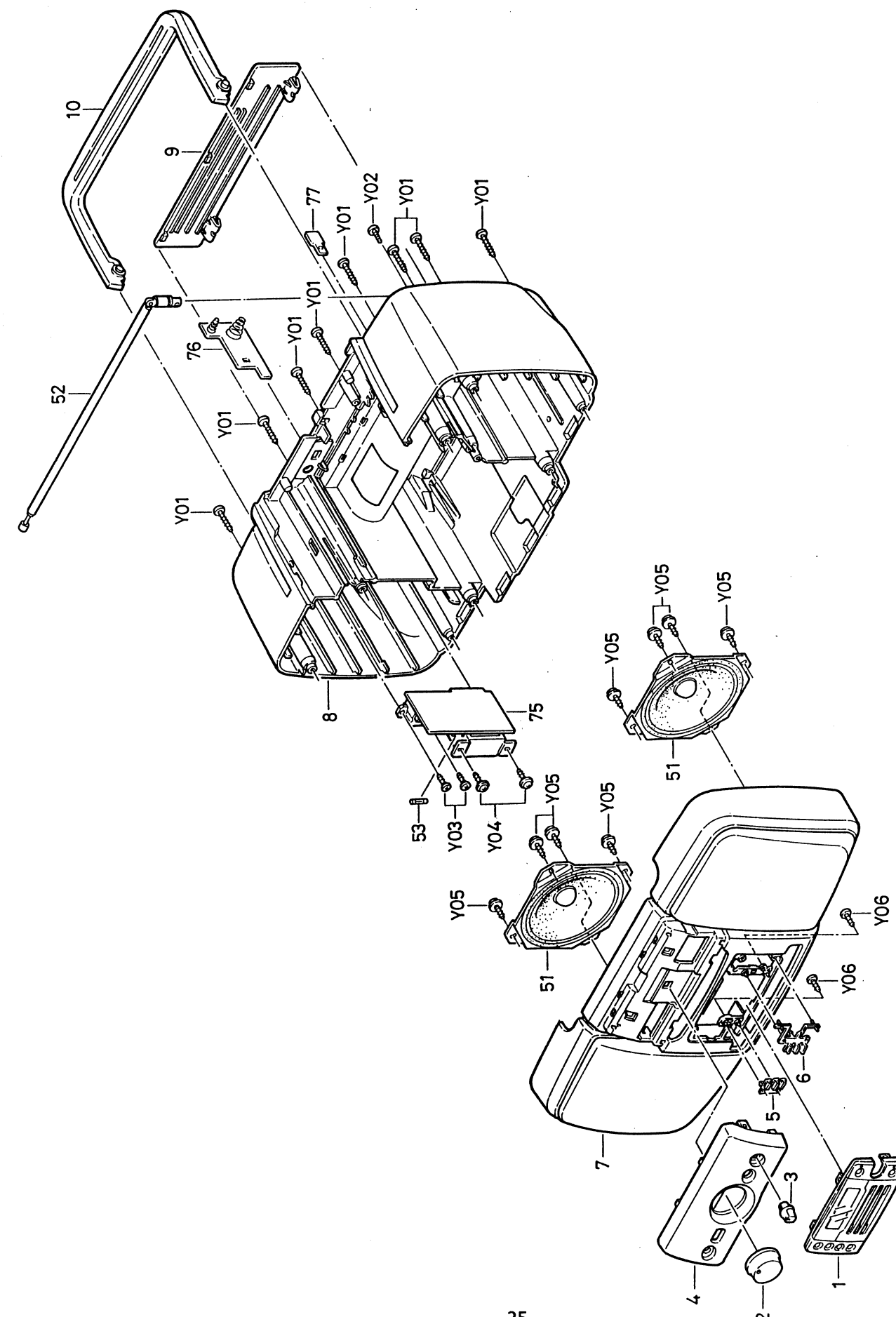
(1) Does the CD mechanism move up and down smoothly?



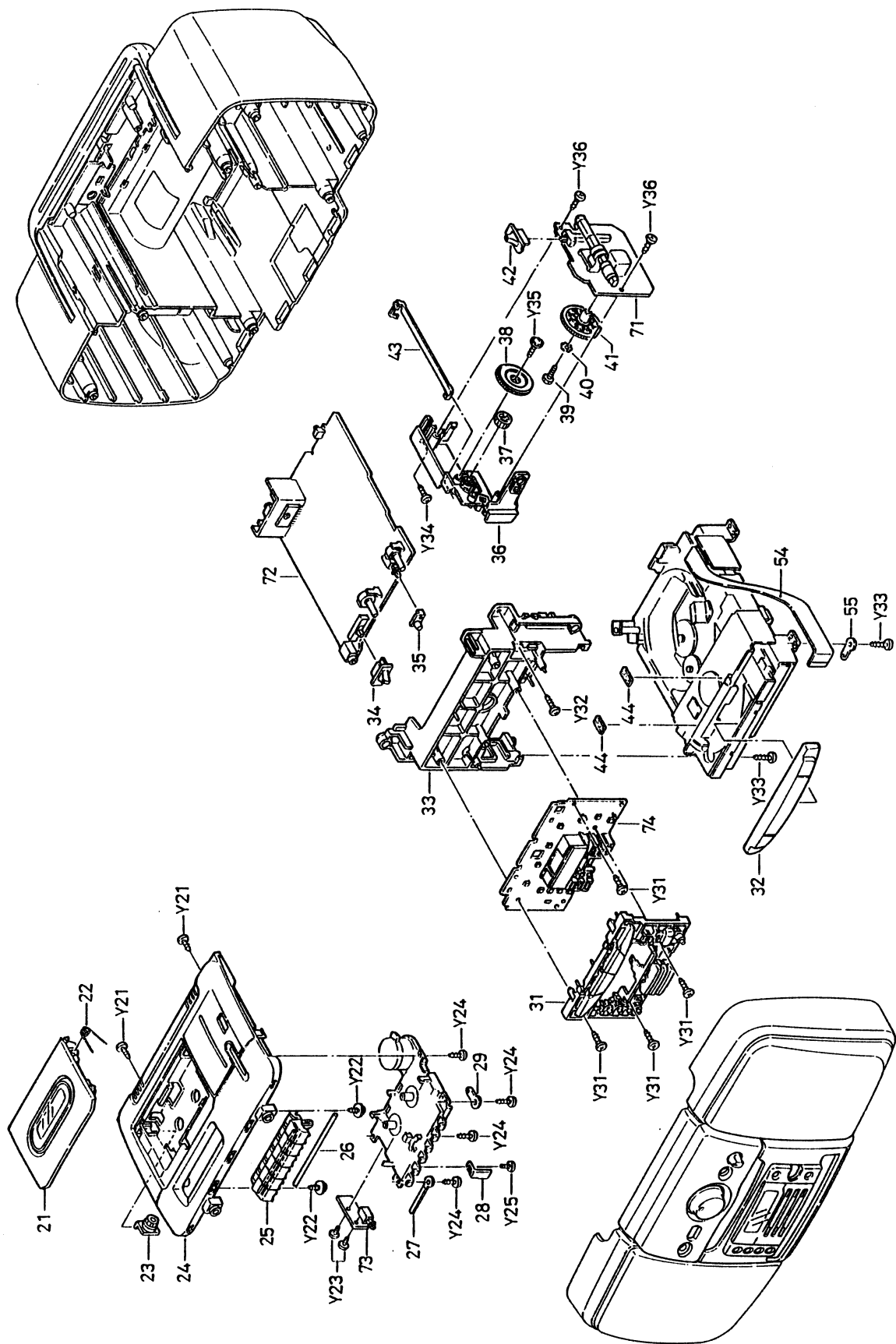
(2) When placing the CD on the loading table, make sure the CD is centered.
If there is any tilt or the like, check the movement of the floating springs (379, 380) of the CD mechanism, and make sure the rubber cushions (381) are mounted in the specified orientation.



EXPLODED VIEW (CABINET & CHASSIS ①)



EXPLODED VIEW (CABINET & CHASSIS ②)



PARTS LIST

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol Δ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

CAUTION: Regular type resistors and capacitors are not listed. To know those values, refer to the schematic diagram.
N.S.P : Not available as service parts.

PACKING & ACCESSORIES

Ref. No.	Part No.	Description
	614 260 5110	CARTON CASE
	614 258 9113	CUSHION TOP(L/R)
	614 258 9106	CUSHION BOTTOM(L/R)
	614 264 7172	INSTRUCTION MANUAL
	614 264 7165	SHEET,800X1000MM
	614 264 3310	CAUTION SHEET
or	Δ 614 023 1762	POWER CORD,AC
or	Δ 614 235 7859	POWER CORD,AC
	Δ 614 023 1779	POWER CORD,AC
	645 006 7662	REMOCON,S980, REMOTE CONTROL
	645 005 7007	BATTERY COVER, REMOTE CONTROL

FIXING PARTS

Ref. No.	Part No.	Description
Y01	411 021 4906	SCR S-TPG BIN 3X20MM, CABINET FRONT/REAR
Y02	411 001 9006	SCR BIN 3X8MM,ROD ANTENNA
Y03	411 021 4005	SCR S-TPG BIN 3X12MM, AC POWER SOCKET
Y04	411 020 9100	SCR S-TPG BRZ+FLG 3X12MM, POWER TRANSFORMER
Y05	411 020 8905	SCR S-TPG BRZ+FLG 3X10MM, SPEAKER
Y06	411 098 4700	SCR S-TPG BIN 2.3X8MM, FRONT PANEL(CD)/CABINET
Y21	411 021 4104	SCR S-TPG BIN 3X12MM, TAPE DECK
Y22	412 032 6408	SPECIAL SCREW,KNOB LEVER, TAPE MECHANISM
Y23	411 025 2007	SCR S-TPG PAN 2X4MM, RECORD SWITCH PCB/ TAPE MECHANISM
Y24	411 021 4005	SCR S-TPG BIN 3X12MM, TAPE MECHANISM
Y25	411 025 1901	SCR S-TPG PAN 2X3MM, RECORD SPRING PLATE
Y31	411 021 4005	SCR S-TPG BIN 3X12MM, SYSTEM CONTROL PCB
Y32	411 021 4005	SCR S-TPG BIN 3X12MM, MOUNTING,CD/REAR
Y33	411 021 4005	SCR S-TPG BIN 3X12MM, CD MECHANISM/MOUNTING
Y34	411 021 4005	SCR S-TPG BIN 3X12MM, MOUNTING,TUNER/REAR
Y35	411 020 9100	SCR S-TPG BRZ+FLG 3X12MM, TUNING KNOB
Y36	411 021 4005	SCR S-TPG BIN 3X12MM, TUNER PCB

CABINET & CHASSIS

Ref. No.	Part No.	Description
1	614 260 4762	ASSY,PANEL,FRONT,CD CONTROL
2	614 257 1163	KNOB,ROTARY,VOLUME
3	614 257 1170	KNOB,ROTARY,TONE
4	614 258 8970	ASSY,PANEL,FRONT, VOLUME CONTROL
5	614 257 0951	DEC,WINDOW,LED,LEFT
6	614 257 0944	DEC,WINDOW,LED,RIGHT
7	614 258 8925	ASSY,CABINET,FRONT
8	614 264 6793	ASSY,CABINET,REAR
9	614 257 1361	LID,BATTERY
10	614 257 1040	HANDLE
21	614 258 8956	ASSY,LID,CASSETTE
22	614 258 9052	SPRING WIRE,CASSETTE,EJECT
23	614 069 0385	GEAR ASSY,CASSETTE,EJECT
24	614 260 2959	ASSY,PANEL,TOP,CASSETTE
25	614 257 1224	KNOB,LEVER,MECHANISM BUTTON
26	614 248 6818	SHAFT,TAPE MECHANISM BUTTON
27	614 129 9136	LUG,TAPE MECHANISM LEAD
28	614 258 1841	SPRING,PLATE,RECORD
29	614 051 9785	LUG,TAPE MECHANISM,GROUND
31	614 257 0517	BUTTON,CD OPERATION
32	614 257 1668	PANEL,FRONT,CD TRAY
33	614 257 1477	MOUNTING,CD,CHASSIS
34	614 257 1149	KNOB,SLIDE,FUNCTION
35	614 257 0500	BUTTON,BASSXPANDER
36	614 257 1484	MOUNTING,TUNER PCB
37	614 238 8044	GEAR,MOUNTING TUNER
38	614 257 1187	KNOB,ROTARY,TUNING
39	411 011 4503	BOLT HEX C-SCT 2.6X16MM, TUNING CAPACITOR/GEAR
40	411 085 1200	WASHER OUT TW 2.6X5.8X0.3MM, TUNING CAPACITOR/GEAR
41	614 258 9076	GEAR,TUNING CAPACITOR
42	614 260 3796	KNOB,SLIDE,BAND
43	614 257 1729	POINTER
44	614 260 0009	CUSHION,RUBBER,CD-MECHANISM
	614 125 1202	CUSHION,25X4MM,BATTERY LID MTG.

ELECTRICAL PARTS

Ref. No.	Part No.	Description
51	645 004 6353	SPEAKER,4 OHM(SP471,SP481)
52	614 237 5051	ANTENNA,ROD
or	614 240 6564	ANTENNA,ROD
53	Δ 423 016 7809	FUSE 250V 2A (FU401)
or	Δ 423 005 9500	FUSE 250V 2A (FU401)
54	645 005 3245	FLEXIBLE FLAT CABLE,18P CD MECHANISM
55	614 051 9785	LUG,CD MECHANISM
CN406	614 261 8424	CORD,4P,CONNECTOR,R/P HEAD
CN416	614 261 8417	CORD,4P,CONNECTOR,MECHANISM
CN417	614 261 8394	CORD,4P,CONNECTOR,SPEAKER
	419 002 0206	PIEZO BUZZER, TWEETER (SP472,SP482)
CN423	614 262 5897	ASSY,CONNECTOR-S,6P, CD MECHANISM
	645 005 7977	CORD,1P,SOCKET,ROD ANTENNA

PARTS LIST

TUNER P.C.BOARD ASSSY

Ref. No.	Part No.	Description
71	614 260 2911	ASSY,PWB,TUNER
C2062	403 081 7805	POLYPRO 350P J 100V
C2101	403 106 1603	NP-ELECT 1U Q 50V
C2107	403 106 1603	NP-ELECT 1U Q 50V
CN201	614 198 2946	SOCKET,4P
CN202	614 198 2922	SOCKET,2P
CT201	614 007 6332	TRIMMER,30PF
CT203	614 007 6332	TRIMMER,30PF
D2001	407 007 9904	DIODE GMA01
D2101	407 000 2605	VARACTOR DI SD115
IC201	409 325 7006	IC TA8122AN
L2005	614 231 7310	ASSY,BAR ANTENNA
L2007	645 005 0688	COIL,FERRITE 120U
L2008	645 005 0671	COIL,FERRITE 219U
L2101	614 233 5864	INDUCTOR,AIR
or	614 238 1298	INDUCTOR,AIR
L2102	614 035 0012	VHF COIL
or	614 229 0217	VHF COIL
Q2101	405 018 7902	TR 2SC380TM-0
Q2102	405 012 2002	TR 2SC1815-GR
or	405 020 7204	TR 2SC945A-K
Q2103	405 012 2002	TR 2SC1815-GR
or	405 020 7204	TR 2SC945A-K
S2001	614 019 1677	SWITCH,SLIDE,BAND SELECT
TP201	614 221 8273	TERMINAL
or	614 254 3597	TERMINAL
VC201	614 252 1205	VC,TUNING CAPACITOR
X2001	645 004 6100	OSC,CERAMIC,456KHZ
or	614 231 3183	RESONATOR,CERAMIC,456KHZ
XF201	614 252 1045	FILTER,LC,FM
XF211	614 030 5074	I.F FILTER,RED,FM
or	614 030 5081	I.F FILTER,BLUE,FM
or	614 030 5098	I.F FILTER,ORANGE,FM
or	614 030 5104	I.F FILTER,BROWN,FM
or	614 030 5111	I.F FILTER,WHITE,FM
XF212	614 030 5074	I.F FILTER,RED,FM
or	614 030 5081	I.F FILTER,BLUE,FM
or	614 030 5098	I.F FILTER,ORANGE,FM
or	614 030 5104	I.F FILTER,BROWN,FM
or	614 030 5111	I.F FILTER,WHITE,FM
XF213	614 251 2579	CERAMIC FILTER 459KHZ
XF214	614 253 6841	RESONATOR,CERAMIC,10.70MHZ
or	614 231 3145	RESONATOR,XTAL,10.67MHZ
or	614 231 3152	RESONATOR,XTAL,10.73MHZ
or	614 231 3169	RESONATOR,XTAL,10.64MHZ
or	614 231 3176	RESONATOR,XTAL,10.76MHZ

AMP/CD P.C.BOARD ASSY

Ref. No.	Part No.	Description
72	614 260 8821	ASSY,PWB,AMP/CD
	411 027 3101	SCR S-TPG BIN 3X8MM
		IC403 MTG.
	411 027 3101	SCR S-TPG BIN 3X8MM
		Q4952 MTG.
C4747	403 058 6107	POLYESTER 0.15U M 50V
C4847	403 058 6107	POLYESTER 0.15U M 50V
C4915	403 059 2801	POLYESTER 2200P J 50V
CN141	614 017 2591	PLUG,8P
CN142	614 250 1665	PLUG,8P
CN143	614 017 2577	PLUG,6P
CN144	614 198 2922	SOCKET,2P
CN145	614 035 5932	SOCKET,2P
or	614 206 0193	SOCKET,2P
CN151	614 221 8273	TERMINAL,1P,BATTERY
CN401	645 005 1111	JACK,PHONE D3.6,MIX MIC

Ref. No.	Part No.	Description
CN402	614 017 2119	PLUG,4P,R/P HEAD
CN403	614 017 2553	PLUG,4P,R/P SWITCH
CN409	614 035 4935	SOCKET,4P,TUNER
CN412	614 229 3812	JACK,HEADPHONE
CN414	614 228 0706	PLUG,4P
CN432	614 017 2119	PLUG,4P
CN433	614 020 6548	SOCKET,2P
or	614 223 9209	SOCKET,2P
D1381	407 003 5108	DIODE DA204K
D1401	△407 140 7201	DIODE DSR-10C-ET5
D1402	△407 140 7201	DIODE DSR-10C-ET5
D1451	407 003 3609	DIODE DAN202K
D1452	407 003 3609	DIODE DAN202K
D4951	△407 053 8708	ZENER DIODE MTZ9.1A
D4952	△407 053 2508	ZENER DIODE MTZ10A
D4954	407 053 8708	ZENER DIODE MTZ9.1A
D4955	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
D4956	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
D4957	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
D4958	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
HS401	614 260 3147	HEAT SINK,IC403 MTG.
HS402	614 121 5891	HEAT SINK,Q4952 MTG.
IC131	409 327 3402	IC CXA1782BQ
IC140	△409 317 8509	IC BA6398FP
IC141	409 322 2707	IC CXD2518Q
IC144	409 192 7109	IC BA15218F
or	409 241 5506	IC XRA15218F
IC401	409 331 4501	IC TA2068N
IC403	△409 295 7402	IC TA8229K
ICP11	614 205 2884	IC PROTECTOR ICP-N10
ICP12	614 234 9106	IC PROTECTOR ICP-N05
ICP41	△614 205 2907	IC PROTECTOR ICP-N20
L1503	614 028 6908	FILTER,220U
L4701	614 212 3171	INDUCTOR,FERITE
L4801	614 212 3171	INDUCTOR,FERITE
L4905	614 212 3171	INDUCTOR,FERITE
Q1301	405 006 1905	TR 2SA933S-S
or	405 006 1806	TR 2SA933S-R
or	405 002 1305	TR 2SA1048-Y
Q1302	405 006 1806	TR 2SA933S-R
or	405 006 1905	TR 2SA933S-S
or	405 002 1305	TR 2SA1048-Y
Q1401	405 001 9302	TR 2SA1020-Y
Q1451	405 006 4005	TR 2SA952-L
or	405 006 3909	TR 2SA952-K
or	405 007 6701	TR 2SB598-F-NP
Q1452	405 000 2908	TR DTC114EK
or	405 113 5902	TR FA1A4M
Q1453	405 000 1109	TR DTA124EK
or	405 113 8200	TR FN1F4M
Q1454	405 000 1109	TR DTA124EK
or	405 113 8200	TR FN1F4M
Q1781	405 000 2908	TR DTC114EK
or	405 113 5902	TR FA1A4M
Q1782	405 014 4509	TR 2SC2412K-R
or	405 011 1006	TR 2SC1623-L6
Q1881	405 000 2908	TR DTC114EK
or	405 113 5902	TR FA1A4M
Q1882	405 014 4509	TR 2SC2412K-R
or	405 011 1006	TR 2SC1623-L6

PARTS LIST

Ref. No.	Part No.	Description
Q4702	405 020 7204	TR 2SC945A-K
Q4703	405 060 6502	TR DTC144TK
Q4741	405 021 0600	TR 2SD1012-G-SPA
Q4802	405 020 7204	TR 2SC945A-K
Q4803	405 060 6502	TR DTC144TK
Q4841	405 021 0600	TR 2SD1012-G-SPA
Q4904	405 020 7204	TR 2SC945A-K
Q4905	405 020 7204	TR 2SC945A-K
Q4906	405 020 7204	TR 2SC945A-K
Q4942	405 005 2002	TR 2SA733-P
Q4951	△405 077 9008	TR TIP29B
Q4952	△405 077 9008	TR TIP29B
Q4953	△405 009 5207	TR 2SB927-S
Q4954	405 020 7204	TR 2SC945A-K
Q4955	405 007 6701	TR 2SB598-F-NP
Q4956	405 000 3103	TR DTC114ES
Q4957	405 075 8409	TR DTC144TS
Q4958	405 060 6502	TR DTC144TK
Q4959	405 002 0308	TR 2SA1037K-R
Q4960	405 060 6502	TR DTC144TK
R1031	401 035 4108	MT-GLAZE 0.000 ZA 1/8W (R1031,R1041-R1044)
R1032	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R4749	△402 070 6300	FUSIBLE RES 2.2 J- 1/4W
R4849	△402 070 6300	FUSIBLE RES 2.2 J- 1/4W
R4952	△402 070 6409	FUSIBLE RES 10 J- 1/4W
R4953	△402 070 7307	RESISTOR 220 J- 1/2W
S1618	614 244 6553	SWITCH,TACT,RESET
S4902	614 235 4506	SWITCH,SLIDE,BEAT CANCEL
S4903	645 005 1128	SWITCH,SLIDE 4P-3T,FUNCTION
S4907	614 023 9676	SWITCH,BASSXPANDER
SVR12	614 256 0501	POTENTIOMETER,100K OHM
T4901	614 034 1317	O.S.C COIL
TP131	614 221 8273	TERMINAL,1P (TP131,TP132)
VR491	614 225 8088	VR,ROTARY(VR471,VR481)
		VOLUME
VR492	645 004 6506	VR,ROTARY 50K/AX2, (VR472,VR482) TONE
X1451	614 259 2137	RESONATOR,CERAMIC
or	614 254 6932	RESONATOR,XTAL

RECORD/PLAY SWITCH P.C.BOARD ASSY

Ref. No.	Part No.	Description
73	614 262 4487	ASSY,PWB,R/P SWITCH
CN404	614 035 4935	SOCKET,4P
or	614 237 9776	SOCKET,4P
CN407	614 261 8431	CORD,4P CONNECTOR,R/P SWITCH
S4901	645 004 9422	SWITCH,PUSH,RECORD/PLAY

SYSTEM CONTROL P.C.BOARD ASSY

Ref. No.	Part No.	Description
74	614 263 7074	ASSY,PWB,SYSTEM CONTROL
	411 021 4005	SCR S-TPG BIN 3X12MM, LCD MTG.
BR151	614 257 1088	HOLDER,LCD
CN153	614 227 7973	SOCKET,18P
or	614 035 2023	SOCKET,18P
D1501	407 012 4406	DIODE 1SS133
or	407 007 9904	DIODE GMA01

Ref. No.	Part No.	Description
D1502	407 012 4406	DIODE 1SS133
or	407 007 9904	DIODE GMA01
D1503	407 053 8500	ZENER DIODE MTZ8.2C
D1504	407 053 8500	ZENER DIODE MTZ8.2C
D1507	407 140 7201	DIODE DSR-10C-ET5
D1581	407 003 3609	DIODE DAN202K
D1651	408 019 9401	LED SLZ-381B-09-AB-T1
D1652	408 019 9401	LED SLZ-381B-09-AB-T1
D1653	408 019 9401	LED SLZ-381B-09-AB-T1
D1654	408 019 9401	LED SLZ-381B-09-AB-T1
D1655	408 019 9401	LED SLZ-381B-09-AB-T1
D1656	408 019 9401	LED SLZ-381B-09-AB-T1
D1657	408 019 4703	LED SLZ-981B-09-AB-T1
D1658	408 019 4703	LED SLZ-981B-09-AB-T1
D1659	407 053 7008	ZENER DIODE MTZ6.2A
DR151	407 159 0309	PHOTO DIODE SPS-424-1
IC151	410 212 7603	IC TMP87CH21F-2024
IC153	409 254 9409	IC S-87050CF-VP
IC154	△409 317 4105	IC BA6286N
IC155	△409 317 4105	IC BA6286N
L1501	614 028 2481	FILTER,39UH
L1502	614 028 3648	FILTER,6.8U
LCD11	645 005 0381	LCD
Q1501	405 005 5508	TR 2SA812-M6
or	405 002 0308	TR 2SA1037K-R
Q1502	405 005 5508	TR 2SA812-M6
or	405 002 0308	TR 2SA1037K-R
Q1506	405 014 4509	TR 2SC2412K-R
or	405 011 1006	TR 2SC1623-L6
Q1507	405 011 1006	TR 2SC1623-L6
or	405 014 4509	TR 2SC2412K-R
Q1508	405 011 1006	TR 2SC1623-L6
or	405 014 4509	TR 2SC2412K-R
Q1510	405 013 1301	TR 2SC2120-Y
or	405 012 7403	TR 2SC2001-K
Q1541	405 113 5902	TR FA1A4M
or	405 000 2908	TR DTC114EK
Q1542	405 113 5902	TR FA1A4M
or	405 000 2908	TR DTC114EK
Q1543	405 113 5902	TR FA1A4M
or	405 000 2908	TR DTC114EK
Q1651	405 113 5902	TR FA1A4M
or	405 000 2908	TR DTC114EK
Q1652	405 000 2908	TR DTC114EK
or	405 113 5902	TR FA1A4M
Q1653	405 113 5902	TR FA1A4M
or	405 000 2908	TR DTC114EK
Q1654	405 113 5902	TR FA1A4M
or	405 000 2908	TR DTC114EK
Q1655	405 113 5902	TR FA1A4M
or	405 000 2908	TR DTC114EK
Q1656	405 113 5902	TR FA1A4M
or	405 000 2908	TR DTC114EK
Q1657	405 113 5902	TR FA1A4M
or	405 000 2908	TR DTC114EK
Q1658	405 000 2908	TR DTC114EK
or	405 113 5902	TR FA1A4M
R1011	401 037 5004	MT-GLAZE 0.000 ZA 1/10W (R1011,R1012)
R1025	401 035 4108	MT-GLAZE 0.000 ZA 1/8W (R1025,R1026)

PARTS LIST

Ref. No.	Part No.	Description
R1508	△402 069 5505	FUSIBLE RES 3.9 J- 1/2W
R1515	△402 069 5505	FUSIBLE RES 3.9 J- 1/2W
S1601	614 220 5556	SWITCH,TACT,FWD
S1602	614 220 5556	SWITCH,TACT,STOP/CLEAR
S1603	614 220 5556	SWITCH,TACT,PLAY/PAUSE
S1604	614 220 5556	SWITCH,TACT,REVERSE
S1605	614 220 5556	SWITCH,TACT,DISC SCAN
S1606	614 220 5556	SWITCH,TACT,OPEN/CLOSE
S1607	614 220 5556	SWITCH,TACT,DISC CHECK
S1608	614 220 5570	SWITCH,TACT,DISC 6
S1609	614 220 5570	SWITCH,TACT,DISC 5
S1610	614 220 5570	SWITCH,TACT,DISC 4
S1611	614 220 5570	SWITCH,TACT,DISC 1
S1612	614 220 5570	SWITCH,TACT,DISC 2
S1613	614 220 5570	SWITCH,TACT,DISC 3
S1614	614 220 5556	SWITCH,TACT,REPEAT
S1615	614 220 5556	SWITCH,TACT,MEMORY
S1616	614 220 5556	SWITCH,TACT,RANDOM
S1617	614 220 5556	SWITCH,TACT,POWER
TH151	408 016 8407	THERMISTOR
X1501	614 215 5561	RESONATOR,CERAMIC,4.19MHZ
X1502	614 219 7936	RESONATOR,XTAL,32.768MHZ

POWER SUPPLY P.C.BOARD ASSY

Ref. No.	Part No.	Description
75	614 260 4571	ASSY,PWB,POWER SUPPLY
CN419	614 020 8948	SOCKET,2P
CN420	614 017 2249	PLUG,2P
CN421	△614 020 7590	SOCKET,AC IN
D4961	△407 088 6403	DIODE GP15D-L
or	△407 098 3300	DIODE RL153-BF-S2
D4962	△407 088 6403	DIODE GP15D-L
or	△407 098 3300	DIODE RL153-BF-S2
D4963	△407 088 6403	DIODE GP15D-L
or	△407 098 3300	DIODE RL153-BF-S2
D4964	△407 088 6403	DIODE GP15D-L
or	△407 098 3300	DIODE RL153-BF-S2
FCL41	△614 208 4540	FUSE HOLDER
FCL42	△614 208 4540	FUSE HOLDER
L4906	△614 213 5761	INDUCTOR,FERITE
PT401	△614 236 4192	POWER TRANSFORMER
S4908	614 226 3631	SWITCH,VOLTAGE SELECTOR

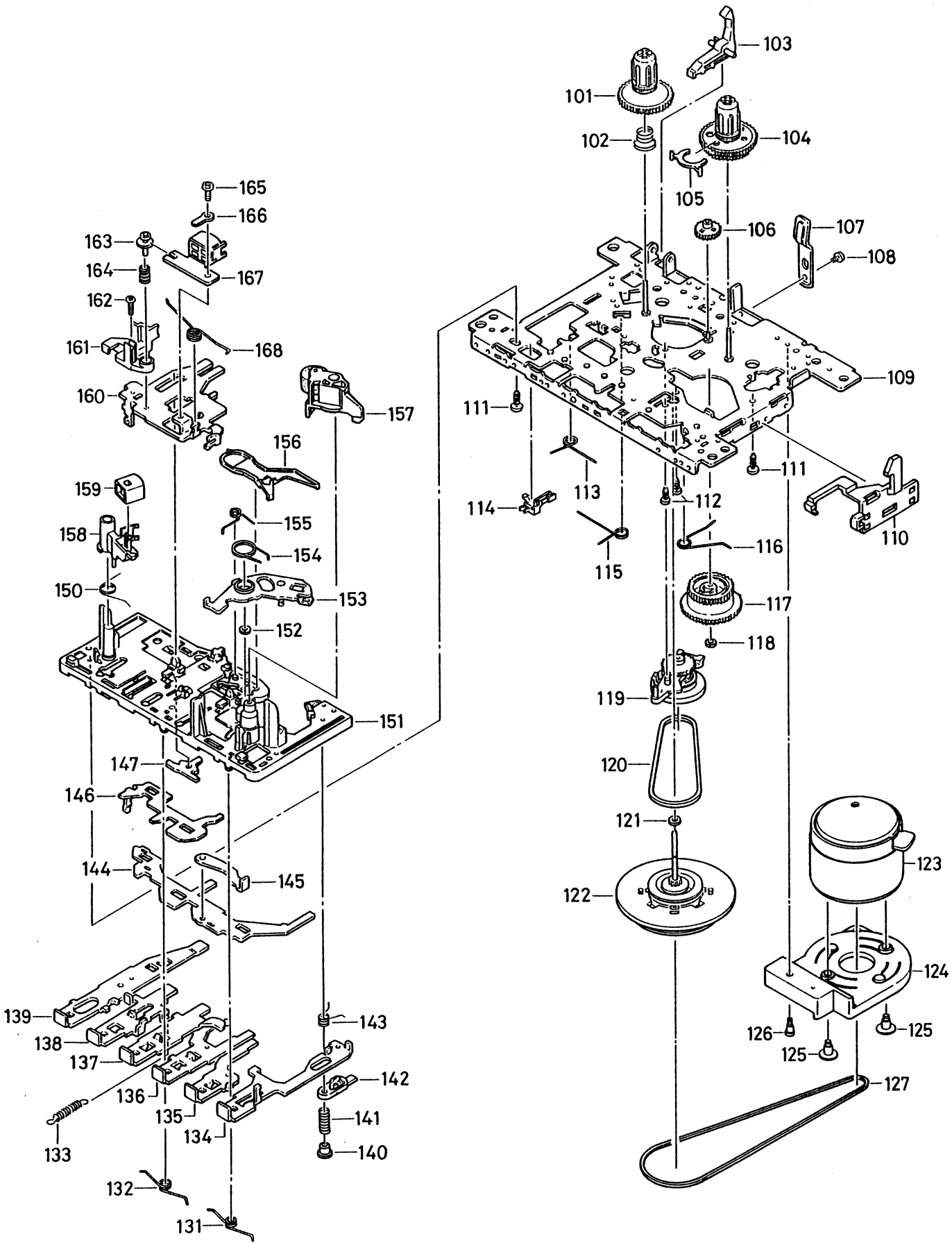
BATTERY TERMINAL P.C.BOARD ASSY "1"

Ref. No.	Part No.	Description
76	614 258 5146	ASSY,PWB,BATTERY TERMINAL "1"
CN422	614 020 1215	SOCKET,2P
CN423	614 261 8400	CORD,2P CONNECTOR, POWER SUPPLY
TR401	614 250 6547	TERMINAL
TR402	614 246 8661	TERMINAL

BATTERY TERMINAL P.C.BOARD ASSY "2"

Ref. No.	Part No.	Description
77	614 258 5153	ASSY,PWB,BATTERY TERMINAL "2"
CN424	614 261 8448	CORD,1P CONNECTOR,TO BACK UP

EXPLODED VIEW (TAPE MECHANISM)



PARTS LIST

TAPE MECHANISM (TM-CH900TN)

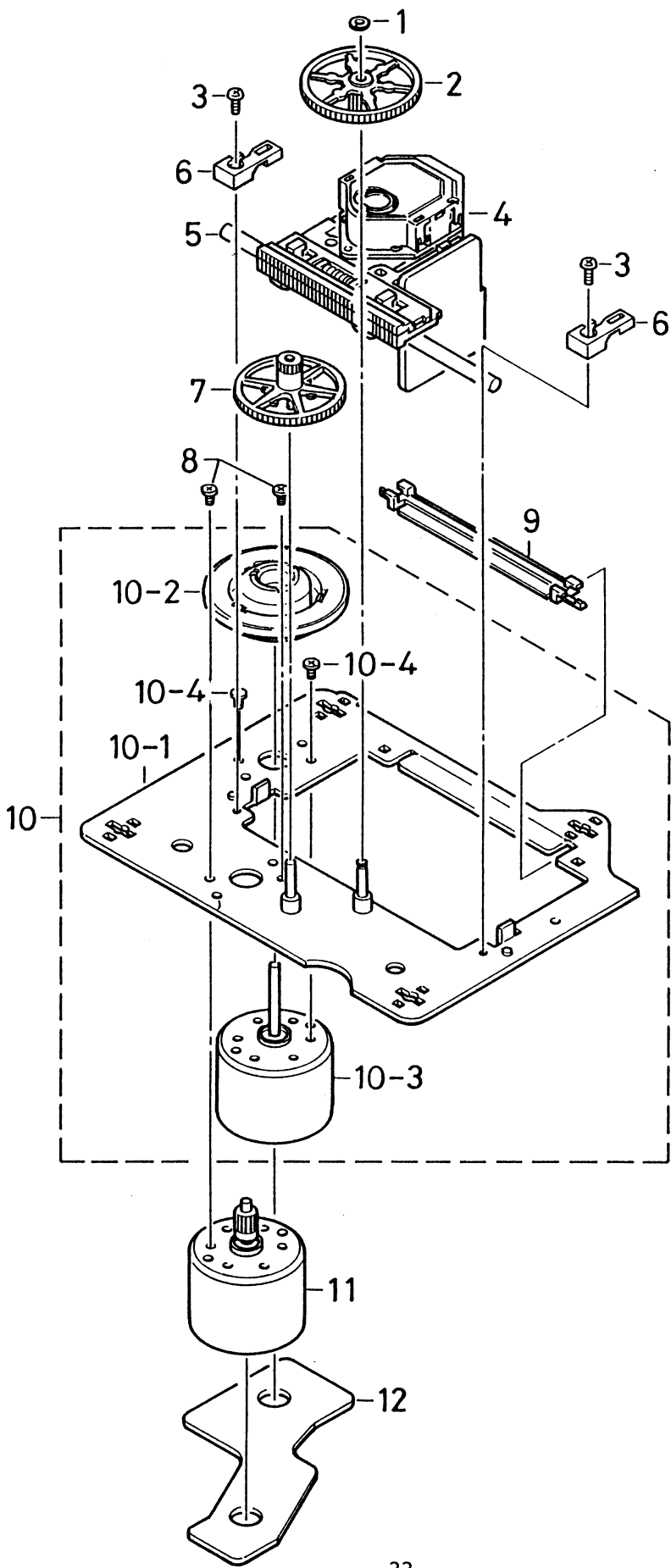
Ref. No.	Part No.	Description
101	614 204 5695	REEL ASSY,SUPPLY
102	614 208 0351	SPRING,COMP,BACK TENSION
103	614 140 1508	LEVER,RECORD SAFETY
104	614 204 5701	REEL ASSY,TAKE UP
105	614 204 8771	LEVER,SENSOR
106	614 134 9046	GEAR,F.FWD
107	614 151 8299	SPRING PLATE,CASSETTE HOLDER
108	412 026 2003	SPECIAL SCREW,C TAPPING SCREW 2X4MM
109	614 067 2770	CHASSIS ASSY
110	614 140 1522	LEVER,EJECT SLIDE
111	412 026 2201	SPECIAL SCREW, P TAPPING BIND SCREW 2X5MM
112	412 026 2300	SPECIAL SCREW, CAMERA TAPPING 2X4.5MM
113	614 152 1282	SPRING WIRE,PAUSE LEVER
114	614 024 1693	SWITCH,MOTOR POWER
115	614 152 1305	SPRING WIRE,RECORD BUTTON LEVER
116	614 152 1275	SPRING WIRE,EJECT ACTUATOR
117	614 134 9053	GEAR,CAM GEAR
118	412 013 5000	SPECIAL WASHER, P WASHER CUT 1.2X3.8X0.3MM
119	614 205 6202	PULLEY ASSY,RF CLUTCH
120	614 204 8740	SQUARE BELT,RF
121	412 012 7005	SPECIAL WASHER,FW,THRUST 2.1X4X0.25MM
122	614 210 9946	FLYWHEEL DISK ASSY
123	614 265 6693	MOTOR ASSEY (WITH PULLEY)
124	614 262 4302	BRACKET-M,MOTOR
125	412 031 6508	SPECIAL SCREW,MOTOR COLLER
126	412 031 9400	SPECIAL SCREW,BRACKET MOTOR
127	614 262 4319	BELT,SQUARE,MAIN
131	614 152 1268	SPRING WIRE,BUTTON LEVER (B)
132	614 152 1251	SPRING WIRE,BUTTON LEVER (A)
133	614 151 4703	SPRING COIL,GROUND
134	614 208 0313	LEVER,PAUSE BUTTON
135	614 196 0531	LEVER,STOP/EJECT BUTTON
136	614 196 0524	LEVER,F.FWD BUTTON
137	614 196 0517	LEVER,REW BUTTON
138	614 196 0555	LEVER,PLAY BUTTON
139	614 196 0500	LEVER,RECORD BUTTON
140	614 129 0669	BOSS,PAUSE STOPPER
141	614 151 7186	SPRING COIL,PAUSE LEVER
142	614 208 0320	LEVER,PAUSE
143	614 152 1244	SPRING WIRE,PAUSE CONTROL
144	614 139 1120	SLIDE,PUSH BUTTON ACTUATOR
145	614 140 1539	LEVER,EJECT KICK
146	614 201 1744	SLIDE,SWITCH ACTUATOR
147	614 129 0676	BOSS,PR STOPPER
150	614 201 8781	SPRING COIL,MAGNET ARM

Ref. No.	Part No.	Description
151	614 067 3258	SUB CHASSIS ASSY,BASE
152	412 026 1808	SPECIAL WASHER, P W CUT 1.45X3.8X0.5MM
153	614 070 0916	LEVER ASSY,GEAR PLATE
154	614 151 8312	SPRING PLATE,GEAR PLATE
155	614 152 1299	SPRING WIRE,M CONTROL
156	614 140 1614	LEVER,SENSING
157	614 237 2371	ASSY,PINCHROLLER
158	614 205 1306	LEVER,MAGNET ARM
159	614 021 7605	MAGNETIC HEAD,ERASING
160	614 211 6944	SLIDE,HEAD PANEL
161	614 146 5111	BRACKET TAPE GUIDE
162	412 026 1501	SPECIAL SCREW,2X6MM
163	412 026 1709	SPECIAL SCREW,HEAD AZIMUTH 2X7MM
164	614 151 7162	SPRING COIL,AZIMUTH
165	412 031 6607	SPECIAL SCREW,(+)BIND 2X3MM
166	614 208 0276	LUG,R/P HEAD GROUND
167	614 249 9931	HEAD,RECORD/PLAY
168	614 210 3432	SPRING WIRE,PANEL(P)SPRING

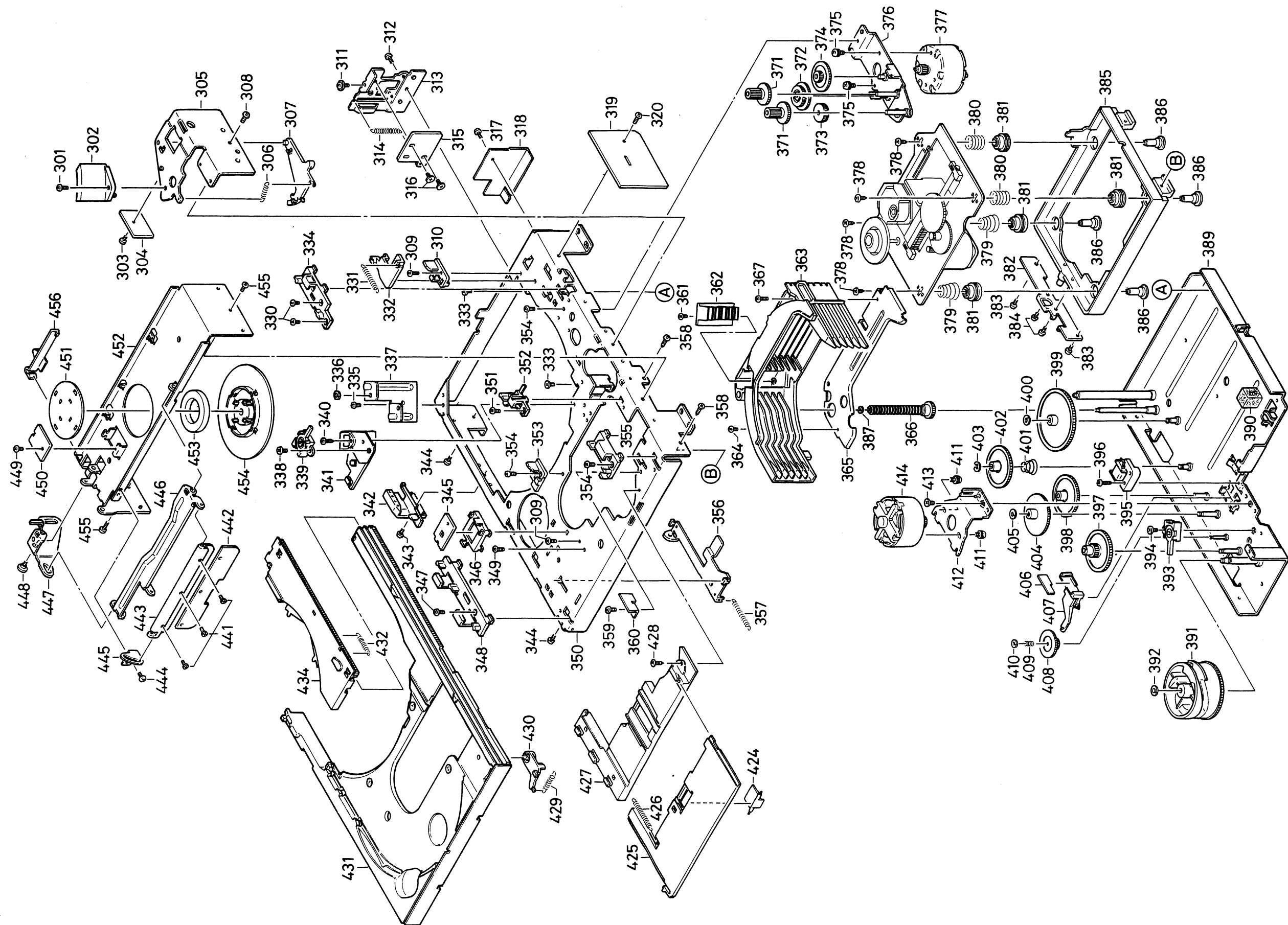
CD MECHANISM (TN-2300-B)

Ref. No.	Part No.	Description
1	412 049 3803	SPECIAL WASHER, 1.55X4.5X0.3MM
2	614 259 1543	GEAR,"C"GEAR
3	412 049 8709	SPECIAL SCREW,SHAFT GUIDE
4	614 256 1058	PICKUP,LASER
5	614 259 1284	SHAFT,PICK-UP SHAFT
6	614 259 6555	MOUNT-M,SHAFT HOLDER
7	614 259 1536	GEAR,"B"GEAR
8	412 049 7603	SPECIAL SCREW, S-TAPPING,2X3MM
9	614 259 1161	GUIDE,PICK-UP SUPPORT
10	614 260 1846	ASSY,TURN TABLE BASE
10-1	614 259 2946	ASSY,CHASSIS,TURN TABLE BASE
10-2	614 260 4335	ASSY,DISK,TURN TABLE
10-3	614 248 2315	COMMUTATE MOTOR,SPINDLE MOTOR
10-4	412 049 7603	SPECIAL SCREW,S-TAPPING 2X3MM
11	614 260 7213	COMMUTATE MOTOR ASSY,SLED MOTOR
12	614 265 6006	ASSY,PCB,MOTOR
	614 259 2038	SWITCH,LEAF,LIMIT(S402)
	614 017 3857	PLUG,6P(CN423)

EXPLODED VIEW (CD MECHANISM)



EXPLODED VIEW (CD CHANGER MECHANISM)



PARTS LIST

CD CHANGER MECHANISM (TN-2300-103-1)

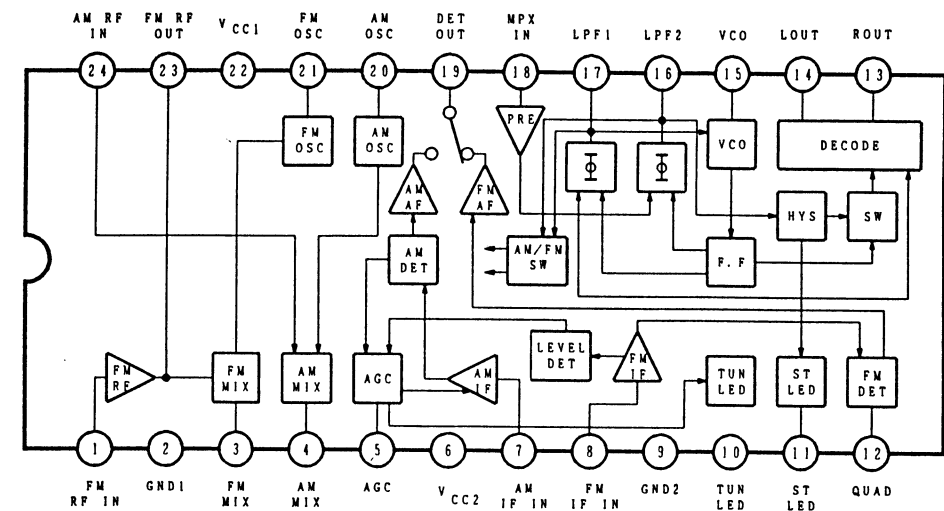
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
301	412 049 4206	SPECIAL SCREW,2X6MM	338	412 049 4909	SPECIAL SCREW,2.6X5MM
302	614 259 1178	GUIDE,GUIDE STOPPER "B"	339	614 259 2021	SWITCH,LEVER,OPEN/CLOSE(S003)
303	412 049 4800	SPECIAL SCREW,2X3.5MM	340	412 049 4206	SPECIAL SCREW,2X6MM
304	614 265 6013	ASSY,PCB,LOADING PLATE	341	614 259 0256	SUPPORT,GUIDE STOPPER "A"
	407 161 0304	PHOTO COUPLE SPI-235-18, PHOTO INTERAPTOR	342	614 259 1116	GUIDE,"L2"
			343	412 043 0204	SPECIAL SCREW,2X4MM
			344	412 043 0204	SPECIAL SCREW,2X4MM
305	614 259 1048	BRACKET-E,GUIDE PLATE	345	614 265 5979	ASSY,PCB,DISC SENSOR,LOWER
306	614 259 1789	SPRING,TENSION,DISC SUPPORT LEVER 3 SPRING		407 162 8903	PHOTO COUPLE PT480,PHOTO TRANSISTOR
307	614 259 1680	LEVER,DISC SUPPORT "3"	346	614 259 0249	MOUNT-E,DISC SENSOR BRACKET
308	412 043 0204	SPECIAL SCREW,2X4MM	347	412 043 0204	SPECIAL SCREW,2X4MM
309	412 049 8709	SPECIAL SCREW,2X5MM	348	614 259 1154	GUIDE,"L1"
310	614 259 1451	FIXER,WIRE CLAMPER	349	412 043 0204	SPECIAL SCREW,2X4MM
311	412 049 4602	SPECIAL SCREW,(+,-)2X6MM	350	614 259 0997	CHASSIS
312	412 043 0204	SPECIAL SCREW,2X4MM	351	412 043 0204	SPECIAL SCREW,2X4MM
313	614 259 1031	BRACKET-E,DISC CASE ELEVATOR SENSOR	352	614 259 1147	GUIDE,"R2"
314	614 259 1741	SPRING,TENSION,DISC CASE ELEVATOR SENSOR	353	614 262 6030	SUPPORT,STOPPER
315	614 265 5993	ASSY,PCB,DISC CASE ELEVATOR SENSOR	354	412 043 0204	SPECIAL SCREW,2X4MM
	614 259 2007	SWITCH,LEVER,DISC CASE RESET(S001)	355	614 259 1130	GUIDE,"R1"
	614 259 2014	SWITCH,LEVER,UN-LOADING (S002)	356	614 259 0331	LEVER,LEVER "1"
	407 161 0304	PHOTO COUPLE SPI-235-18, PHOTO INTERAPTOR	357	614 259 1734	SPRING,TENSION,LEVER
316	412 049 4008	SPECIAL SCREW	358	412 049 4503	SPECIAL SCREW,2X6MM
317	412 043 0204	SPECIAL SCREW,2X4MM	359	412 043 0204	SPECIAL SCREW,2X4MM
318	614 259 1079	BRACKET-M,CHASSIS BRACKET	360	614 259 1185	STOPPER,DISC BASE BRACKET
319	614 265 5962	PCB ASSY,CONNECTOR PCB	361	412 049 4503	SPECIAL SCREW,2X6MM
	614 035 2023	SOCKET,18P(CN001)	362	614 262 6047	SUPPORT,DISC
or	614 227 7973	SOCKET,18P(CN001)	363	614 259 1093	MOUNT-M,DISC CASE,DISC HOLDER,DISC RACK
or	614 260 7404	SOCKET,18P(CN001)	364	412 043 0204	SPECIAL SCREW
	614 017 2584	PLUG,7P(CN002)	365	614 259 1413	REINFORCEMENT,HOLDER, DISC CASE
	614 017 2614	PLUG,10P(CN003)	366	614 259 1512	GEAR,WORM GEAR, DISC CASE,UP/DOWN
	401 027 1306	CARBON 510 JA 1/6W, (R001,R002)	367	412 043 0204	SPECIAL SCREW,2X4MM
320	412 049 8501	SPECIAL SCREW,2X5MM	371	614 259 1581	GEAR,LOADING GEAR "D"
330	412 043 0204	SPECIAL SCREW,2X4MM	372	614 259 1574	GEAR,LOADING GEAR "C"
331	614 259 0362	SPRING,TENSION,LOCK LEVER	373	614 259 1598	GEAR,LOADING GEAR "E"
332	614 259 0324	LEVER,LOCK	374	614 259 1567	GEAR,LOADING GEAR "B"
333	412 050 0709	SPECIAL SCREW,2X3MM	375	412 049 4404	SPECIAL SCREW,2X3.5MM
334	614 259 1123	GUIDE,"R3"	376	614 259 2960	ASSY,BRACKET-M,LOADING
335	412 049 8303	SPECIAL SCREW,2X4MM	377	614 265 6020	MOTOR,ASSY,OPEN/CLOSE,LOADING
336	412 049 8105	SPECIAL WASHER,2.6X4.5X0.5MM	378	412 049 8402	SPECIAL SCREW,2X4MM
337	614 259 1062	BRACKET-M,WORM GEAR, DISC CASE	379	614 259 1819	SPRING,COMP,CD MECHANISM FLOATING SPRING "A"
			380	614 259 1802	SPRING,COMP,CD MECHANISM FLOATING SPRING "B"

PARTS LIST

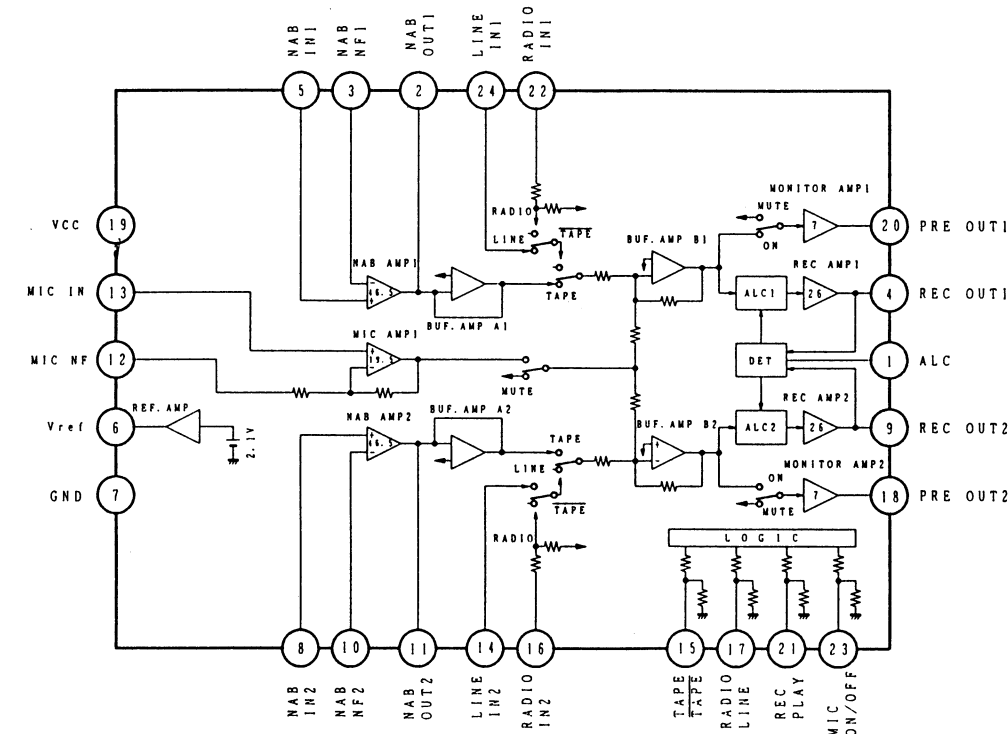
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
381	614 259 1437	CUSHION,RUBBER,CD MECHANISM FLOATING RUBBER	431	614 259 2991	ASSY,TABLE,LOADING,DISC TRAY
382	614 259 1420	REINFORCEMENT,CD MECHANISM REINFORCEMENT	432	614 259 1765	SPRING,TENSION,LOADING PLATE
383	412 049 5005	SPECIAL SCREW,2X3.5MM	434	614 262 4296	ASSY,SLIDE,LOADING PLATE
384	412 049 5005	SPECIAL SCREW,2X3.5MM	441	412 049 8600	SPECIAL SCREW,2X6MM
385	614 259 1109	MOUNT-M,CD MECHANISM HOLDER	442	614 259 0270	PROTECTOR,PROTECTION "2"
386	614 259 1406	SUPPORT,CD MECHANISM FLOAT RUBBER HOLDER	443	614 259 0263	PROTECTOR,PROTECTION "1"
387	412 051 1002	SPECIAL WASHER,THRUST FOR DISC CASE	444	412 043 0204	SPECIAL SCREW,2X4MM
389	614 259 2953	ASSY,CHASSIS,SUB,CHANGER	445	614 259 0232	BRACKET-M,CAM PLATE
390	614 260 4014	CUSHION,RUBBER,SUB CHASSIS	446	614 259 0355	LEVER,LEVER "3"
391	614 259 1475	GEAR,CAM,CD MECHANISM UP/DOWN,"G4"	447	614 259 0348	LEVER,LEVER "2"
392	412 049 3704	SPECIAL WASHER,3X6X0.5MM	448	412 005 8101	SPECIAL SCREW,PK COLLAR "A"
393	614 259 2021	SWITCH,LEVER,UP/DOWN(S004)	449	412 043 0204	SPECIAL SCREW,2X4MM
394	412 050 0709	SPECIAL SCREW,2X3MM	450	614 265 5986	ASSY,PCB,DISC SENSOR,UPPER
395	614 261 1685	ASSY,MAGNETIC,COIL,SOLENOID		614 259 1994	SWITCH,PUSH,DISC SENSOR (S005)
396	412 050 0303	SPECIAL SCREW,2X8MM		407 162 9009	PHOTO COUPLE GL480,DIODE
397	614 259 1468	GEAR,UP/DOWN,ELEVATOR "G3"		401 027 1306	CARBON 510 JA 1/6W, (R003)
398	614 259 1499	GEAR,UP/DOWN,ELEVATOR "G6"	451	614 259 0300	CLAMP,CLAMPER,UPPER
399	614 259 1505	GEAR,UP/DOWN,ELEVATOR "G8"	452	614 259 1055	BRACKET-M,CLAMPER BRACKET
400	412 049 3605	SPECIAL WASHER,2.6X6X0.5MM	453	614 259 0317	MAGNET,CHUCK PULLEY
401	614 259 9273	SPRING,COMP,R/F CLUTCH	454	614 259 0294	CLAMP,MAGNET HOLDER,CHUCK, LOWER
402	614 259 1499	GEAR,UP/DOWN,ELEVATOR,"G6"	455	412 043 0204	SPECIAL SCREW,2X4MM
403	412 049 8204	SPECIAL WASHER, "E" RING,2.5MM	456	614 262 6535	SUPPORT,DISC GUARD
404	614 259 1482	GEAR,UP/DOWN,ELEVATOR "G5"	CN002	614 258 0561	ASSY,CONNECTOR-S,7P, MOTOR/SWITCH WIRE
405	412 049 3605	SPECIAL WASHER,2.6X6X0.5MM	CN003	614 258 0578	ASSY,CONNECTOR-S,10P, MOTOR/SWITCH WIRE
406	614 259 1369	CHIP,UP/DOWN,ELEVATOR CONTROL PLATE	CN004	614 258 0714	WIRE,5P,SENSOR-PCB
407	614 259 1635	LEVER,UP/DOWN,ELEVATOR CONTROL	CN421	614 262 5101	ASSY,WIRE,8P,WHITE, PICK UP LEAD
408	614 257 6908	GEAR,UP/DOWN,ELEVATOR "G2"	CN422	614 262 5095	ASSY,WIRE,8P,RED, PICK UP LEAD
409	614 259 1796	SPRING,COMP,UP/DOWN, ELEVATOR "G2"			
410	412 049 3506	SPECIAL WASHER,1.85X5X0.5MM			
411	412 049 4404	SPECIAL SCREW,2X2.5MM			
412	614 259 1024	BRACKET-E,UP/DOWN, ELEVATOR MOTOR			
413	412 050 0709	SPECIAL SCREW,2X3MM			
414	614 265 6037	MOTOR,ASSY,UP/DOWN,DISC CASE/CD MECHANISM ELEVATOR			
424	614 259 1383	SUPPORT,DISC STOPPER			
425	614 259 0218	COVER,PLATE "A"			
426	614 259 0379	SPRING,TENSION,COVER PLATE			
427	614 259 0980	COVER,PLATE "B"			
428	412 049 4206	SPECIAL SCREW,2X6MM			
429	614 259 1758	SPRING,TENSION, LOADING TABLE LOCK LEVER			
430	614 259 1673	LEVER,LOADING LOCK			

IC BLOCK DIAGRAM & DESCRIPTION

IC201 TA8122AN (TUNER SYSTEM)

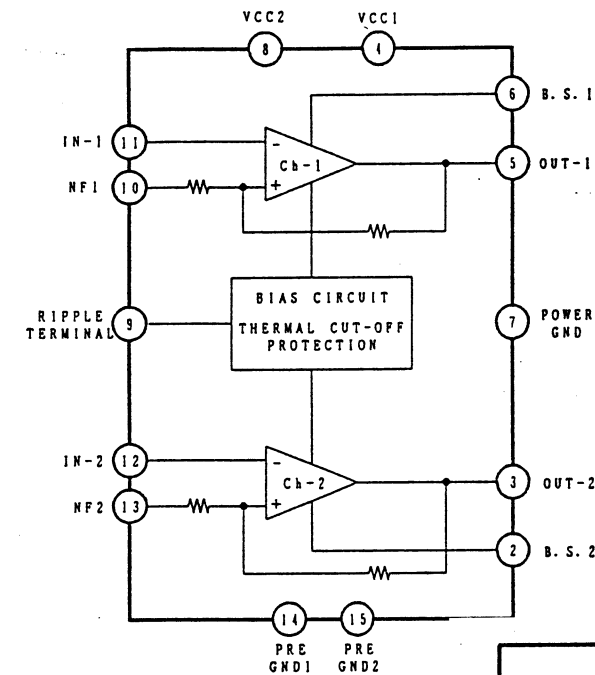


IC401 TA2068N (PRE-AMP.)

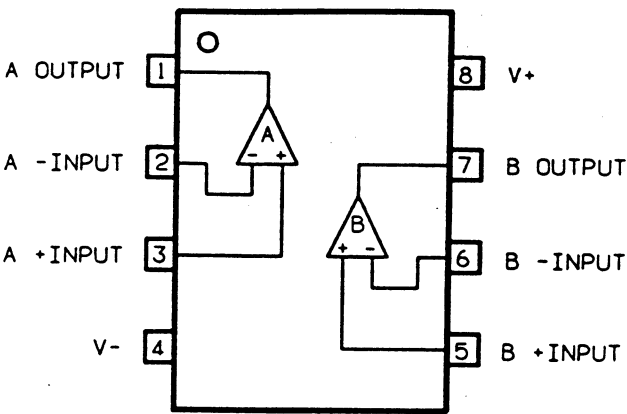


IC BLOCK DIAGRAM & DESCRIPTION

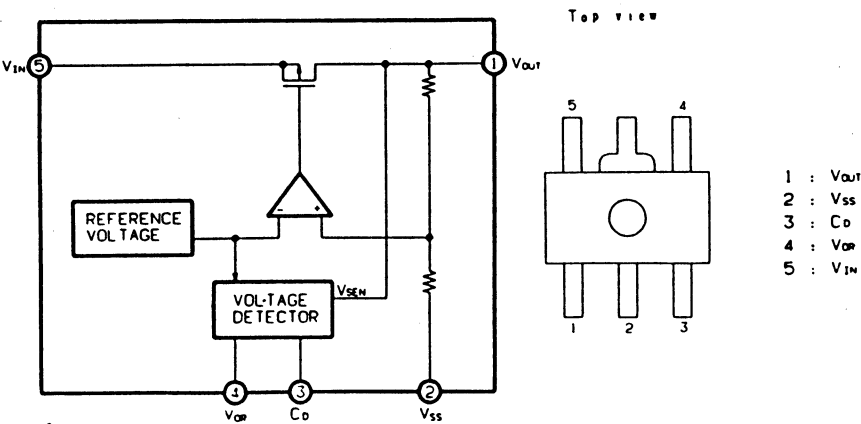
IC403 TA8229K (POWER AMP.)



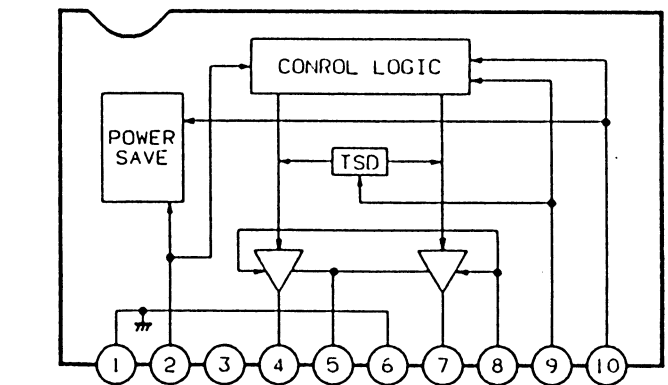
IC144 BA15218F (OP AMP.)



IC153 S-87050CF-VP (VOLTAGE REGULATOR)



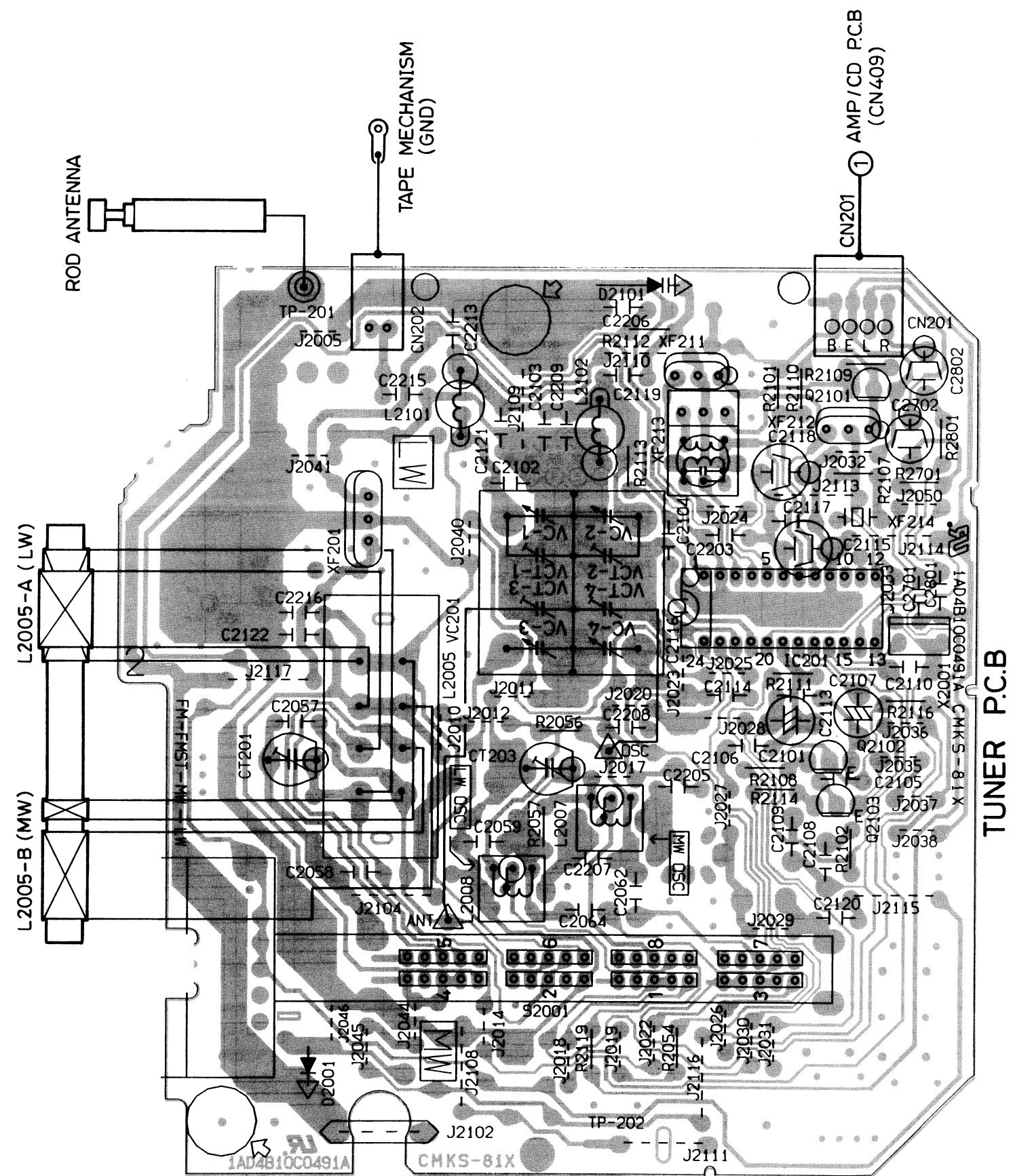
IC154,IC155 BA6286N (MOTOR DRIVER)



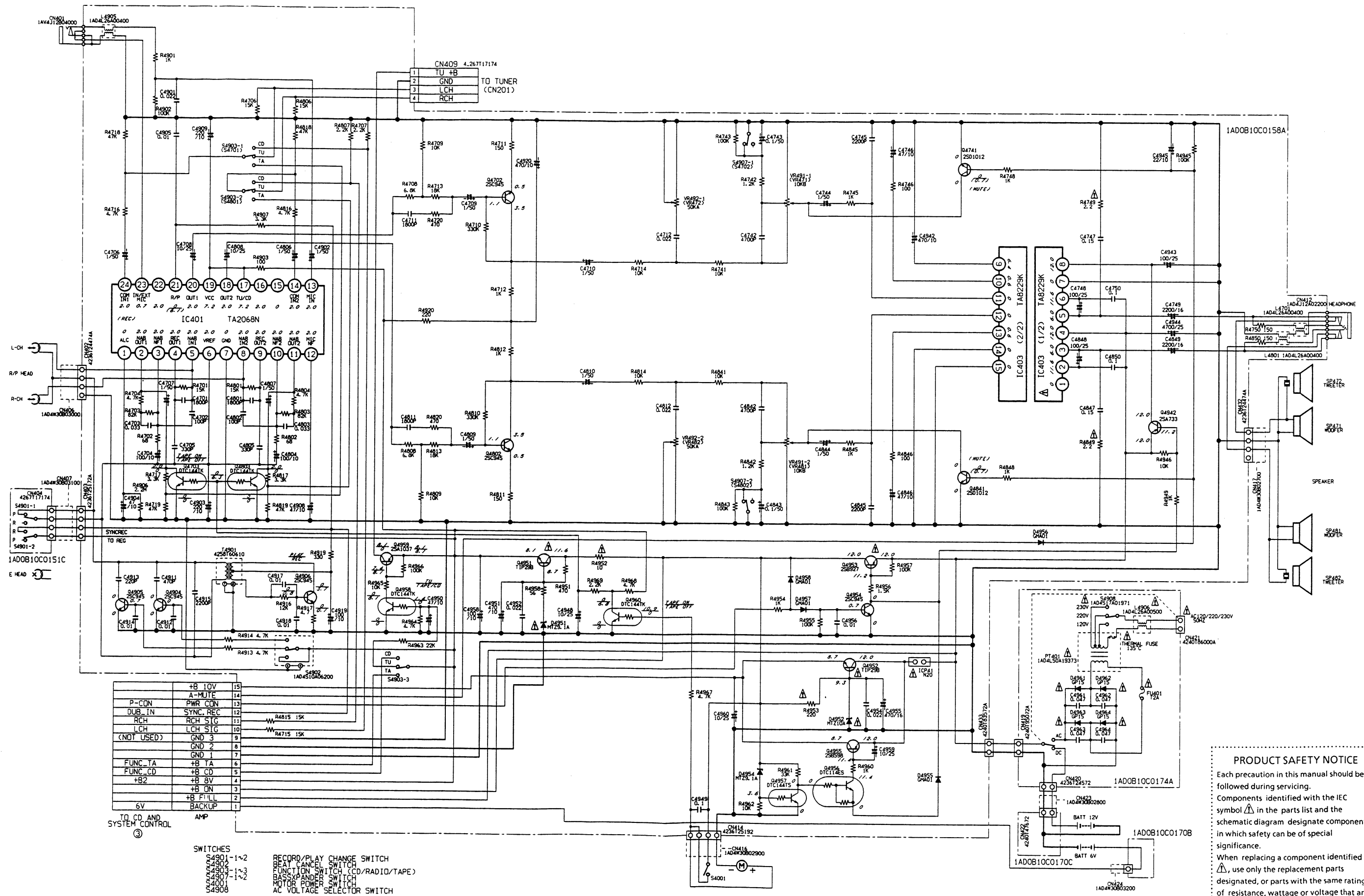
No.	NAME
1	GND
2	R IN
3	V REF
4	OUT2
5	R NF
6	GND
7	OUT1
8	VM
9	VCC
10	FIN

TRUTH TABLE				No. : (NAME)
10 (F IN)	2 (R IN)	4 (OUT 2)	7 (OUT 1)	MODE
H	L	L	H	FWD
L	H	H	L	REVERSE
H	H	L	L	BRAKE
L	L	OPEN	OPEN	STAND BY

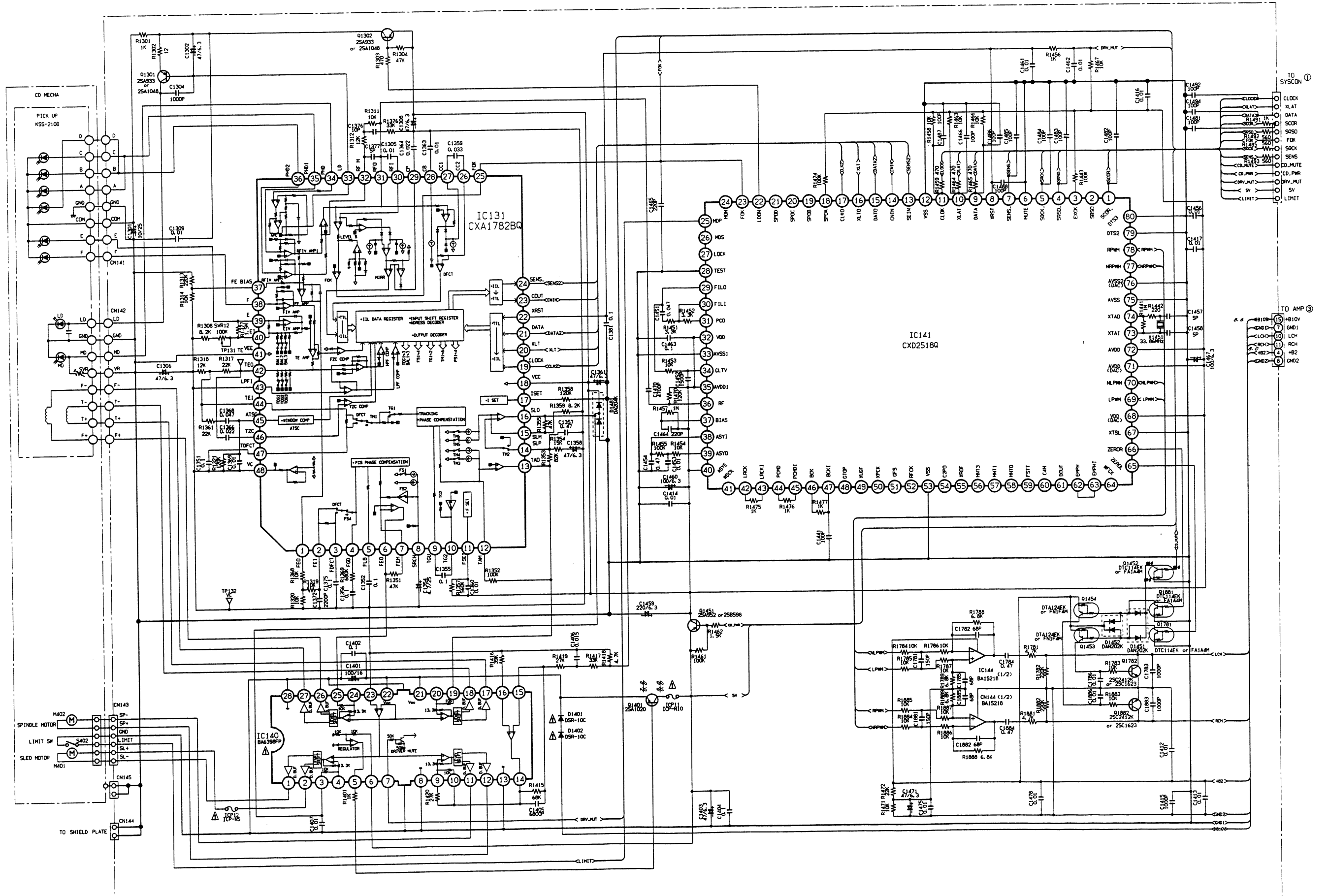
WIRING DIAGRAM (TUNER)

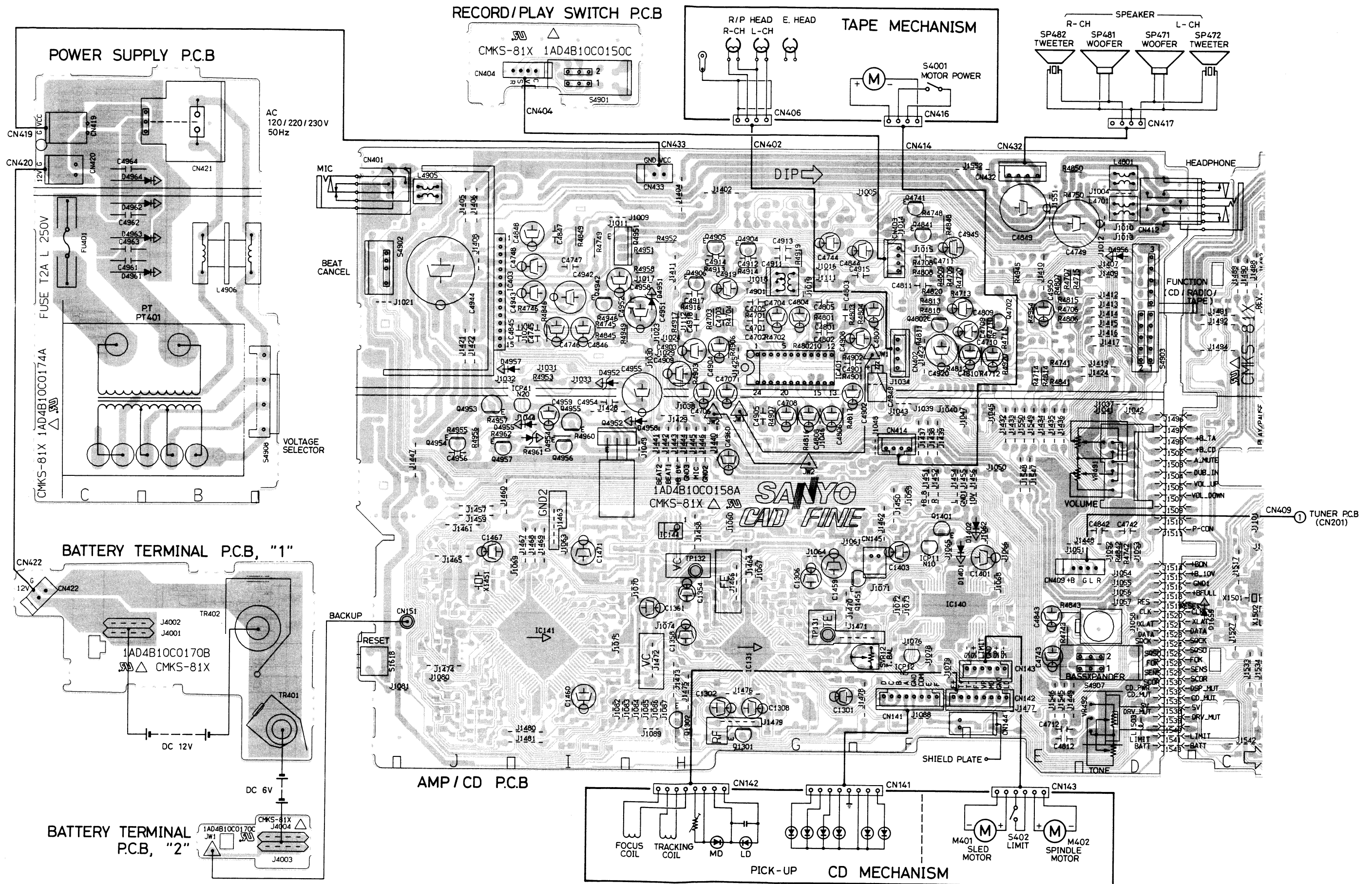


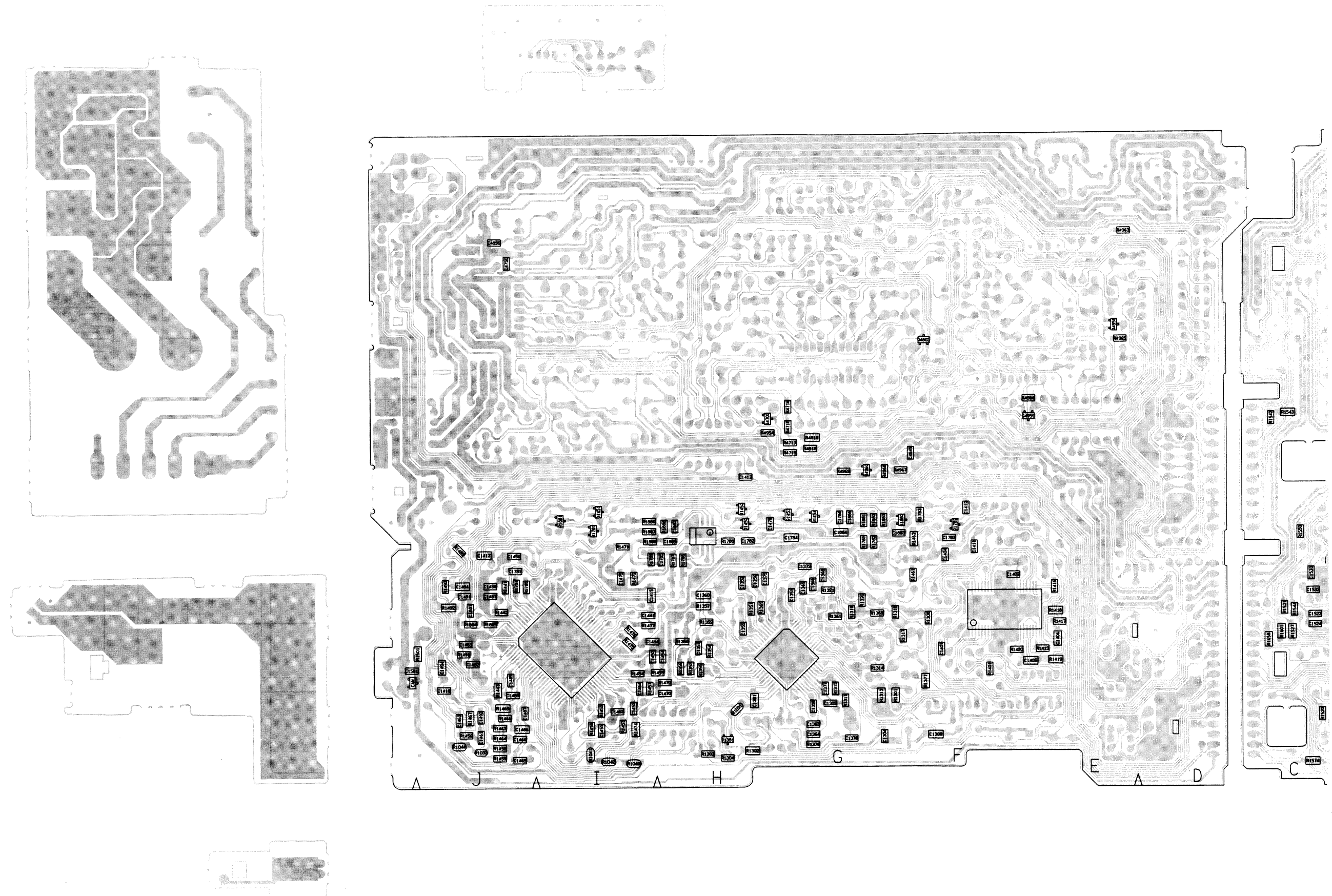
SCHEMATIC DIAGRAM (AMP.)

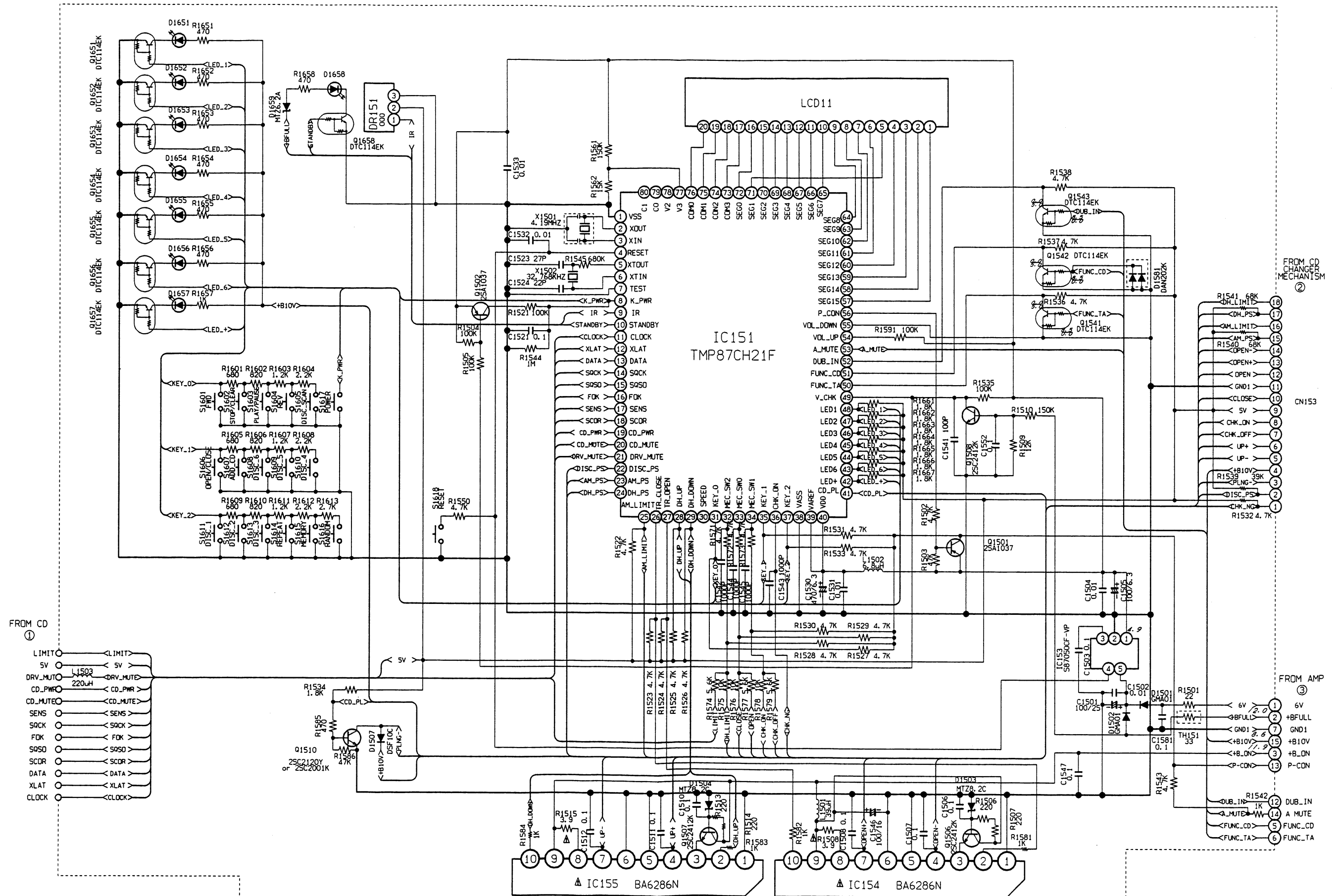


SCHEMATIC DIAGRAM (CD)

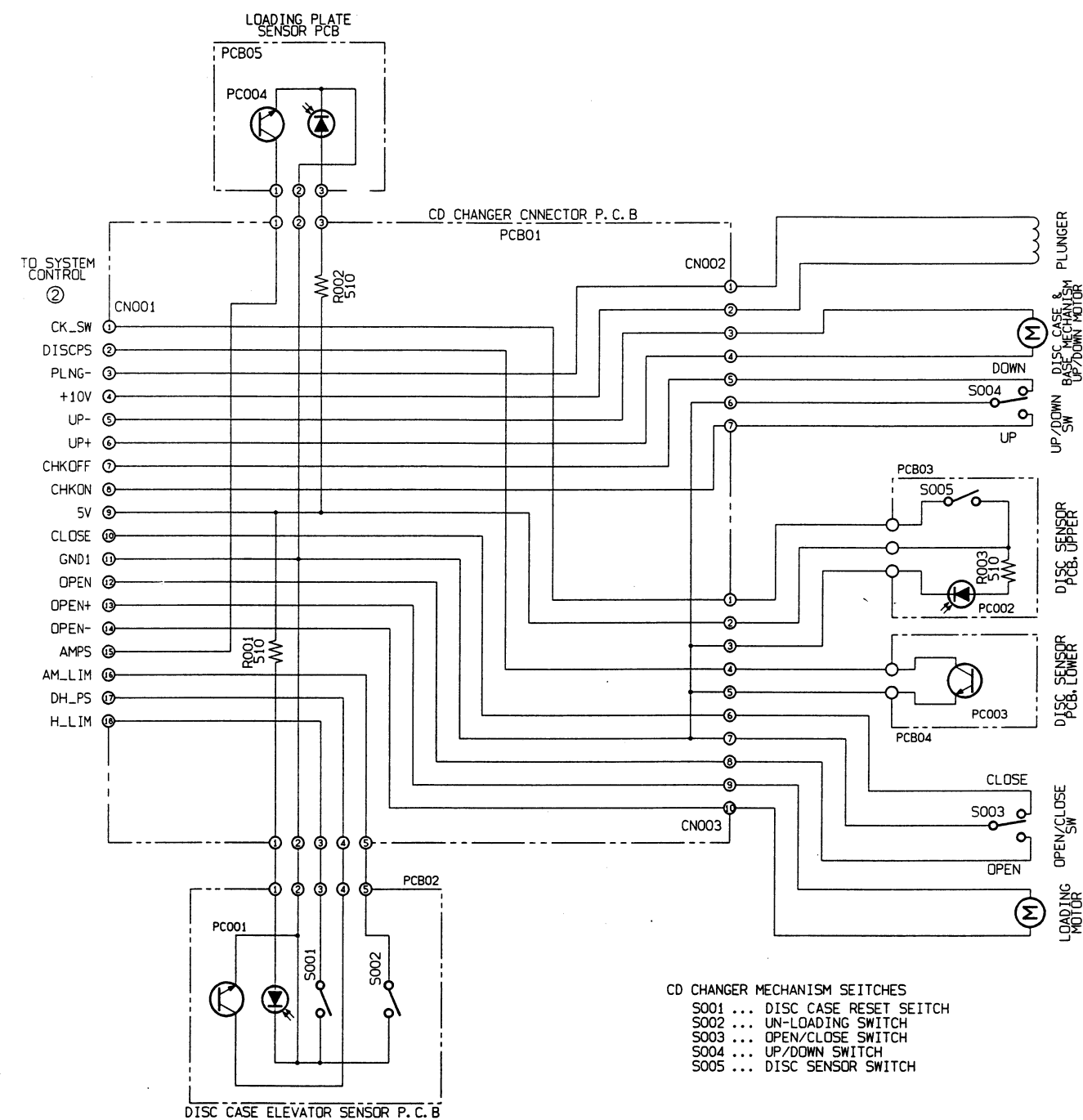




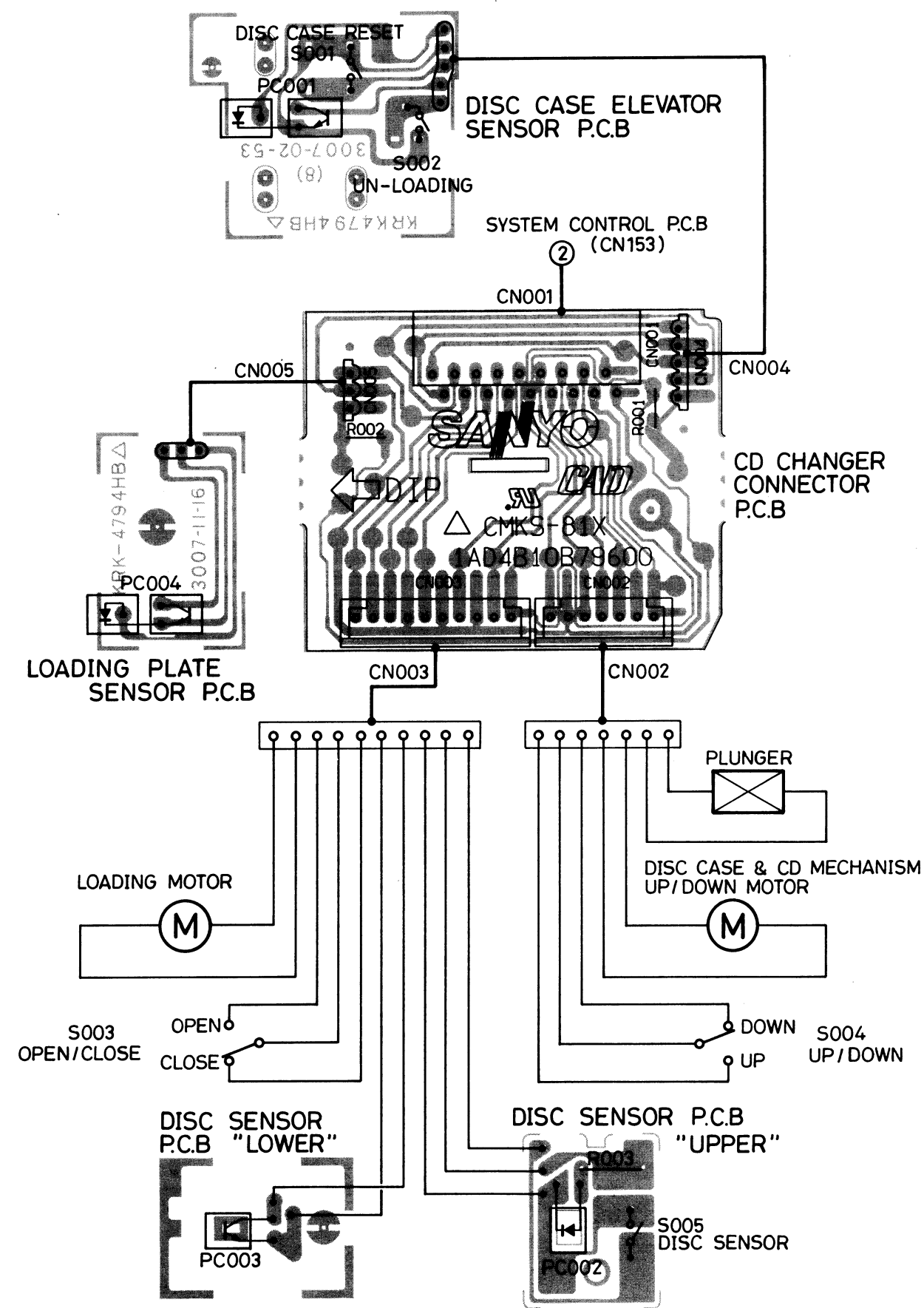




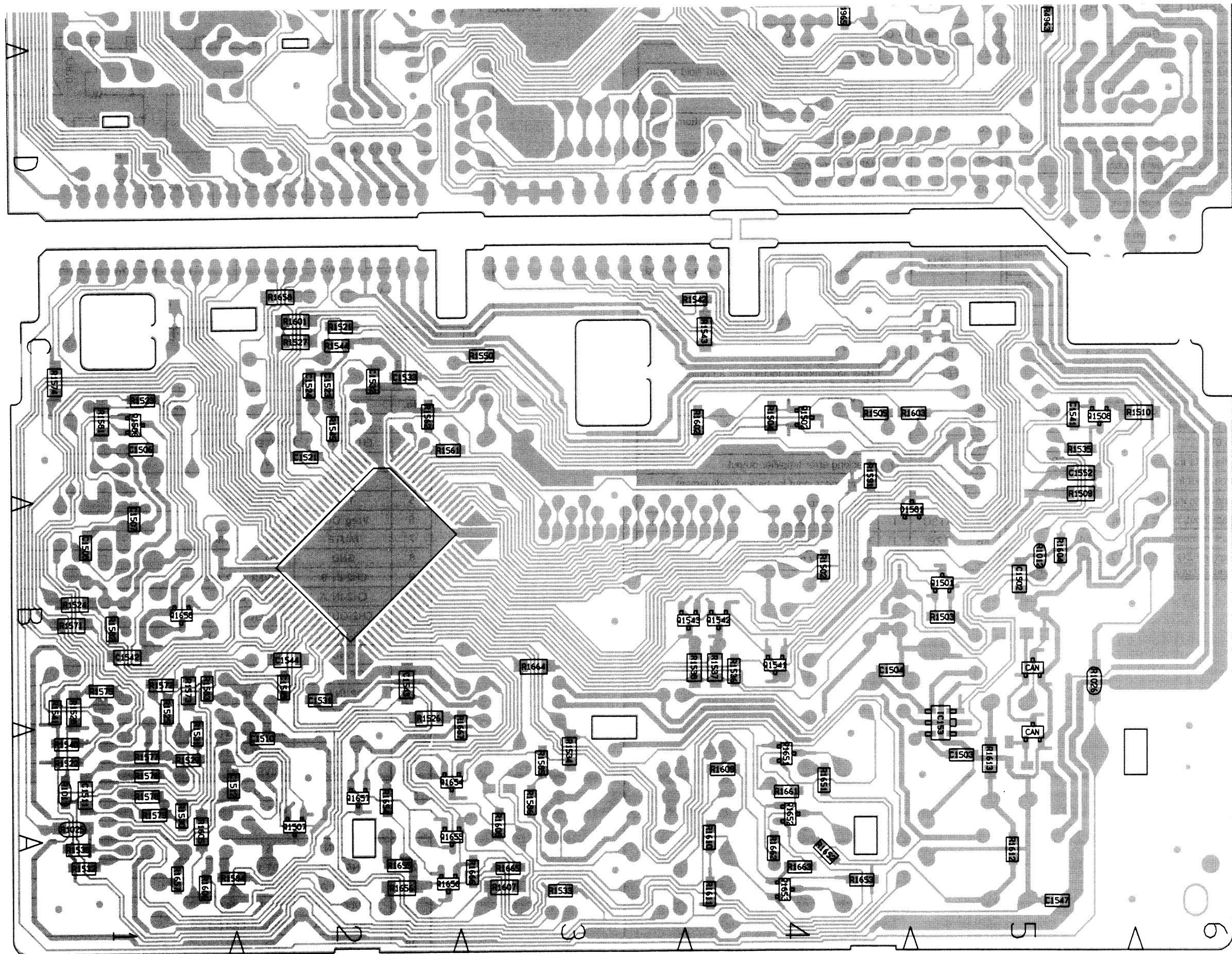
SCHEMATIC DIAGRAM (CD CHANGER MECHANISM)



WIRING DIAGRAM (CD CHANGER MECHANISM)



CD CHANGER MECHANISM



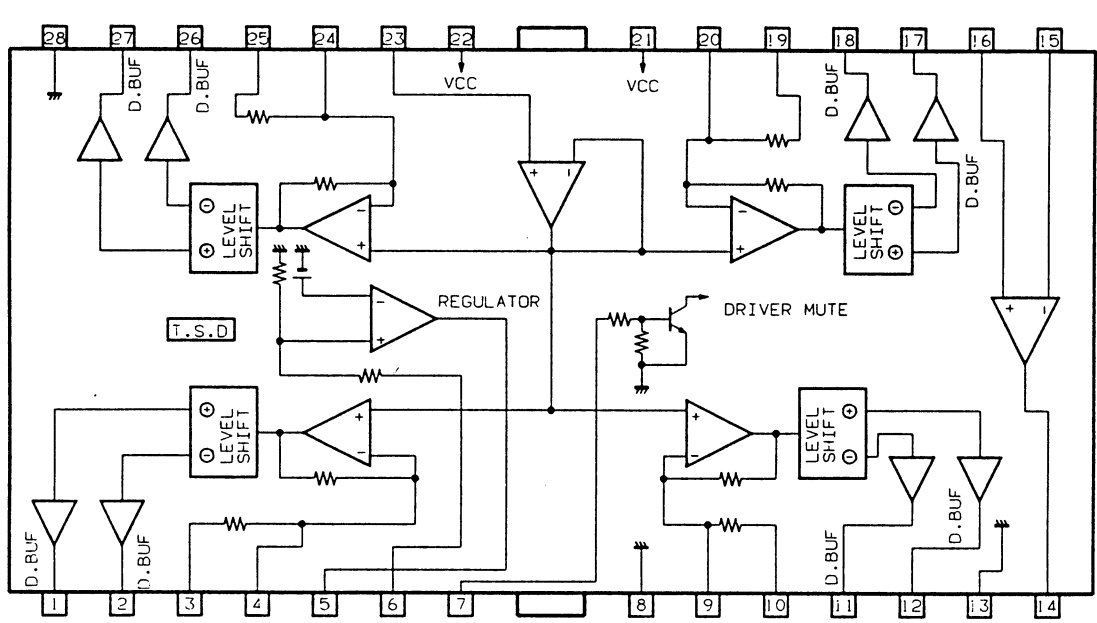
IC BLOCK DIAGRAM & DESCRIPTION

IC131 CXA1782BQ (SERVO SIGNAL PROCESSOR)

No.	Name	I / O	Description	No.	Name	I / O	Description
1	FEO	O	Focus error amplifier output.	25	FOK	O	Focus OK comparator output.
2	FEI	I	Focus error input.	26	CC2	O	Input pin for the DEFECT bottom hold output capacitance-coupled.
3	FDFCT	I	Capacitor connection pin for detect time constant.	27	CC1	I	DEFECT bottom hold output.
4	FGD	I	Ground this pin through a capacitor when decreasing the focus servo high-frequency	28	CB	I	Connection pin for DEFECT bottom hold capacitor.
5	FLB	I	External time constant setting pin for increasing the focus servo low frequency.	29	CP	I	Connection pin for MIRR hold capacitor. MIRR comparator non-inversed input.
6	FEO	O	Focus drive output.	30	RFI	I	Input pin for the RF summing amplifier output capacitance-coupled.
7	FEM	I	Focus amplifier negative input.	31	RFO	O	RF summing amplifier output. Eye pattern check point.
8	SRCH	I	External time constant setting pin for generating focus servo waveform.	32	RFM	I	RF summing amplifier inverted input. The RF amplifier gain is determined by the resistance connected between this pin and RFO pin.
9	TGU	I	External time constant setting pin for switching tracking high-frequency gain.	33	LD	O	APC (Auto Power Control) amplifier output.
10	TG2	I		34	PHD	I	APC (Auto Power Control) amplifier input.
11	FSET	I	High cut off frequency setting pin for focus and tracking phase compensation amplifier.	35	PHD1	I	RF I-V amplifier inverted input.
12	TAM	I	Tracking amplifier negative input.	36	PHD2	I	
13	TAO	O	Tracking drive output.	37	FEBIAS	I	Bias adjustment of focus error amplifier.
14	SLP	I	Sled amplifier non-inverted input.	38	F	I	F I-V and E I-V amplifier inverted input.
15	SLM	I	Sled amplifier negative input.	39	E	I	
16	SLO	O	Sled drive output	40	EI	-	I-V amplifier E gain adjustment.
17	ISSET	I	Setting pin for Focus search, Tracking jump, and Sled kick current.	41	V _{EE}	-	GND
18	V _{CC}	-	+ 5.0V	42	TEO	O	Tracking error amplifier output.
19	CLK	I	Serial data transfer clock input from CPU.	43	LPFI	I	Comparator input for balance adjustment.
20	XLT	I	Latch input from CPU.	44	TEI	I	Tracking error input.
21	DATA	I	Serial data input from CPU.	45	ATSC	I	Window comparator input for ATSC detection.
22	XRST	I	Reset input; resets at Low.	46	TZC	I	Tracking zero-cross comparator input.
23	C.OUT	O	Track number count signal output.	48	VC	O	(V _{CC} + V _{EE}) / 2 DC voltage output.
24	SENS	O	Outputs FZC, DFCT, TZC, gain, balance, and others according to the command from CPU.				

IC BLOCK DIAGRAM & DESCRIPTION

IC140 BA6398FP (POWER DRIVER)



T.S.D : THERMAL SHUT DOWN D.BUF : DRIVE BUFFER

No.	NAME	DESCRIPTION
1	CH1-OUT A	DRIVER CH1 (-)
2	CH1-OUT B	DRIVER CH1 (+)
3	CH1-IN A	DRIVER CH1
4	CH1-IN B	NOT USED
5	Tr-B	REGULATOR
6	Vreg OUT	Vreg
7	MUTE	MUTE CONTROL
8	GND	GND
9	CH2-IN B	DRIVER CH2 GAIN
10	CH2-IN A	DRIVER CH2
11	CH2-OUT B	DRIVER CH2 (+)
12	CH2-OUT A	DRIVER CH2 (-)
13	GND	GND
14	OP OUT	OP. AMP
15	OP IN (-)	OP. AMP
16	OP IN (+)	OP. AMP
17	CH3-OUT A	DRIVER CH3 (-)
18	CH3-OUT B	DRIVER CH3 (+)
19	CH3-IN A	DRIVER CH3
20	CH3-IN B	NOT USED
21	VCC	VCC
22	VCC	VCC
23	BIAS IN	BIAS
24	CH4-IN B	NOT USED
25	CH4-IN A	DRIVER CH4
26	CH4-OUT B	DRIVER CH4 (+)
27	CH4-OUT A	DRIVER CH4 (-)
28	GND	GND

IC BLOCK DIAGRAM & DESCRIPTION

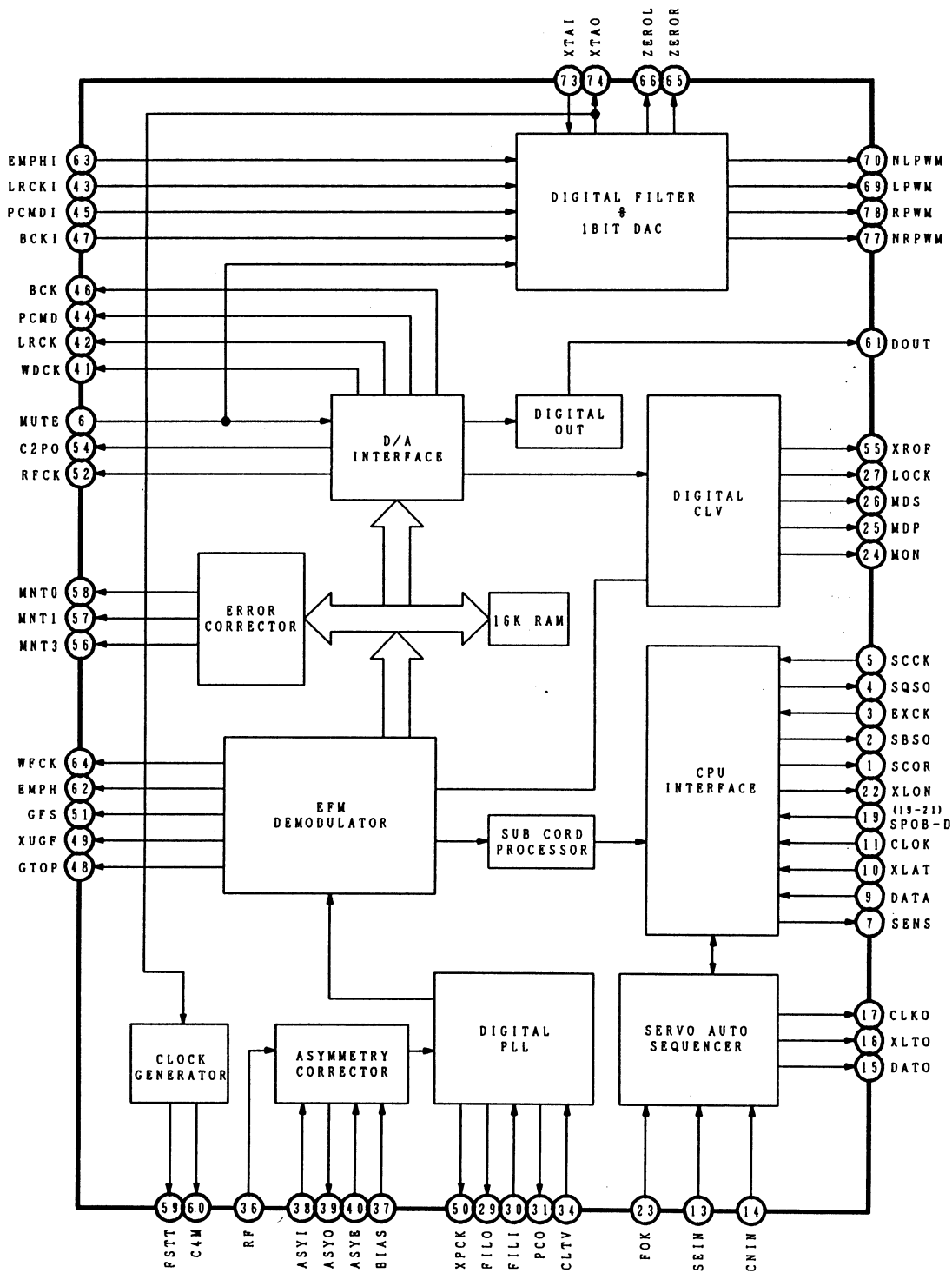
IC141 CXD2518Q (DIGITAL SIGNAL PROCESSOR)

No.	Name	I / O	Description
1	SCOR	O	Turns "H" when sync S0 or S1 is detected.
2	SBSO	O	Serial output of sub-code P ~ W.
3	EXCK	I	Clock input for reading SBSO.
4	SQSO	O	Serial output of SUBQ & SOBIT.
5	SQCK	I	Clock input for reading SQSO.
6	MUTE	I	"H" at muting, "L" at muting cancel.
7	SENS	O	SENS signal output to CPU.
8	XRST	I	System reset, "L" at resetting.
9	DATA	I	Inputs serial data from CPU.
10	XLAT	I	Latches input from CPU. Serial data latches at falling edge.
11	CLOCK	I	Inputs serial data transfer clock from CPU.
12	V _{SS}	-	GND.
13	SEIN	I	Inputs SENS signal from SSP.
14	CNIN	I	Inputs track jump count signal
15	DATO	O	Outputs serial data to SSP
16	XLTO	O	Outputs latches to SSP. Serial data latches at falling edge.
17	CLKO	O	Outputs serial data transfer clock to SSP.
18	TEST2	I	Pin for TEST. Normal used state: V _{DD} .
19	SPOB	I	Not used
20	SPOC	I	Not used
21	SPOD	I	Not used
22	XLON	O	Interface for extension of M. processor(output)
23	FOK	I	Focus OK signal input pin. Used servo auto sequencer with SENS output.
24	MON	O	ON/OFF control signal for spindle motor.
25	MDP	O	Servo control signal for spindle motor.
26	MDS	O	Not used
27	LOCK	O	Not used
28	TEST	I	GND.
29	FIL0	O	Output of filter for master PLL.(Slave = Digital PLL)
30	FIL1	I	Inputs to filter for master PLL.
31	PC0	O	Outputs of charge pump for master PLL.
32	V _{DD}	-	Power supply for digital.(+5V)
33	AV _{SS1}	-	Power supply for analog.(0V)
34	CLTV	I	VCO control voltage input for master PLL.
35	AV _{DD1}	-	Power supply for analog.(+5V)
36	RF	I	EFM signal input.
37	BIAS	I	Inputs constant current for asymmetry correction circuit.
38	ASYI	I	Inputs comparator voltage for asymmetry correction circuit.
39	ASYO	O	EFM fill swing output.("L" = V _{SS} , "H" = V _{DD})
40	ASYE	I	"L" : OFF of asymmetry correction. "H" : ON of asymmetry correction.

No.	Name	I / O	Description
41	WDCK	O	Not used
42	LRCK	O	D/A interface for 48-bit slot. LR clock (f = FS)
43	LRCKI	I	Inputs LR clock to DAC.(48-bit slot)
44	PCMD	O	D/A interface. Serial data(2'SCOMP,MBS first)
45	PCMDI	I	Inputs audio data to DAC.(48-bit slot)
46	BCK	O	D/A interface. Bit clock.
47	BCKI	I	Inputs bit clock to DAC.(48-bit slot)
48	GTOP	O	Not used
49	XUGF	O	Not used
50	XPCK	O	Not used
51	GFS	O	Not used
52	RFCK	O	Not used
53	V _{SS}	-	GND.
54	C2PO	O	Not used
55	XROF	O	Not used
56	MNT3	O	Not used
57	MNT1	O	Not used
58	MNT0	O	Not used
59	FSTT	O	Not used
60	C4M	O	Not used
61	DOUT	O	Not used
62	EMPH	O	Stays "H" for playback disc provided with emphasis or "L" for that without emphasis.
63	EMPHI	I	De-emphasis ON/OFF of DAC. "H" at ON, "L" at OFF.
64	WFCK	O	Not used
65	ZEROL	O	Outputs detection for non-sound data. "H" at detection for non-sound data (L-ch)
66	ZEROR	O	Outputs detection for non-sound data. "H" at detection for non-sound data (R-ch)
67	DTS1	I	Normal used state: "L".
68	V _{DD}	-	Power supply for DAC.
69	LPWM	O	Outputs PWM for L-ch. (Positive Phase)
70	NLPWM	O	Outputs PWM for L-ch. (Negative Phase)
71	AV _{DD2}	-	Power supply for L-ch PWM driver.
72	AV _{DD3}	-	Power supply for X'tal.
73	XTAI	I	Inputs X'tal oscillation circuit (33.8688MHz).
74	XTAO	I	Outputs X'tal oscillation circuit (33.8688MHz).
75	AV _{SS3}	-	GND.
76	AV _{SS2}	-	GND.
77	NRPWM	O	Outputs PWM for R-ch. (Negative Phase)
78	RPWM	O	Outputs PWM for R-ch. (Positive Phase)
79	DTS2	I	Normal used state: "L".
80	DTS3	I	Normal used state: "L".

IC BLOCK DIAGRAM & DESCRIPTION

IC141 CXD2518Q (DIGITAL SIGNAL PROCESSOR)



IC BLOCK DIAGRAM & DESCRIPTION

IC151 TMP87CH21F-2024 (SYSTEM CONTROL)

No.	Name	I/O	Active	Description	No.	Name	I/O	Active	Description
1	VSS	-	-	GND (0V)	39	VAREF	-	-	REFERENCE VOLTAGE
2	XOUT	O	-	RESONATOR CONNECTING PIN, 4.19MHz	40	VDD	-	-	VDD
3	XIN	I	-	RESONATOR CONNECTING PIN, 4.19MHz	41	CD_PL	O	L	SOLENOID
4	RESET	I	-	SYSTEM RESET	42	LED_SCAN	O	L	DISC SCAN LED INDICATED
5	XTOUT	O	-	RESONATOR CONNECTING PIN, 37.768kHz	43	LED_6	O	L	DISC No.6 LED INDICATED
6	XTIN	I	-	RESONATOR CONNECTING PIN, 37.768kHz	44	LED_5	O	L	DISC No.5 LED INDICATED
7	TEST	I	-	GND	45	LED_4	O	L	DISC No.4 LED INDICATED
8	K_PWR	I	L	POWER KEY INPUT	46	LED_3	O	L	DISC No.3 LED INDICATED
9	IR	I	L	REMOTE CONTROL	47	LED_2	O	L	DISC No.2 LED INDICATED
10	STANDBY	O	H	LED, "STANDBY" INDICATED	48	LED_1	O	L	DISC No.1 LED INDICATED
11	CLOCK	O	-	COMMAND, CLOCK OUTPUT, IC141	49	V_CHK	I	-	CHECKING, VOLTAGE
12	XLAT	O	-	COMMAND, XLAT OUTPUT, IC141	50	FUNCT_0	I	-	FUNCTION (LOW = TAPE)
13	DATA	O	-	COMMAND, DATA OUTPUT, IC141	51	FUNCT_1	I	-	FUNCTION (LOW = CD)
14	SQCK	O	-	SUBQ INPUT, SERIAL CLOCK OUTPUT	52	DUB_IN	I	L	DUBBING SIGNAL INPUT
15	SQSO	I	-	SUBQ INPUT, SERIAL DATA INPUT	53	A_MUTE	O	H	AMP "MUTE" CONTROL
16	FOK	I	-	FOK INPUT	54	VOL_UP	O	H	NOT USED
17	SENS	I	-	SENS INPUT	55	VOL_DOWN	O	H	NOT USED
18	SCOR	I	-	SCOR DETECTOR INPUT	56	POWER	O	L	POWER CONTROL, ON / OFF
19	CD_PWR	O	L	CD, DSP POWER CONTROL	57	SEG15	O	-	LCD
20	CD_MUTE	O	H	CD, MUTE CONTROL (ANALOG)	58	SEG14	O	-	LCD
21	DRV_MUTE	O	H	CD, DRIVER MUTE CONTROL	59	SEG13	O	-	LCD
22	DISC_PS	I	L	PHOTO SENSOR, DISC	60	SEG12	O	-	LCD
23	AM_PS	I	L	PHOTO SENSOR, ARM POSITION	61	SEG11	O	-	LCD
24	DH_PS	I	L	PHOTO SENSOR, DISC HOLDER	62	SEG10	O	-	LCD
25	AM_LIMIT	I	L	ARM LIMIT POSITION	63	SEG09	O	-	LCD
26	TR_CLOSE	O	H	TRAY CLOSE CONTROL	64	SEG08	O	-	LCD
27	TR_OPEN	O	H	TRAY OPEN CONTROL	65	SEG07	O	-	LCD
28	DH_UP	O	H	DISC HOLDER "UP" CONTROL	66	SEG06	O	-	LCD
29	DH_DOWN	O	H	DISC HOLDER "DOWN" CONTROL	67	SEG05	O	-	LCD
30	SPEED	O	-	NOT USED	68	SEG04	O	-	LCD
31	KEY_0	-	-	KEY INPUT	69	SEG03	O	-	LCD
32	MEC_SW2	-	-	MECHANISM SWITCH, LIMIT	70	SEG02	O	-	LCD
33	MEC_SW0	-	-	MECHANISM SWITCH, OPEN / CLOSE	71	SEG01	O	-	LCD
34	MEC_SW1	-	-	MECHANISM SWITCH, CHUCK ON / OFF	72	SEG00	O	-	LCD
35	KEY_1	-	-	KEY INPUT	73	COM3	O	-	LCD COMMON
36	CHK_NG	I	L	CHUCKING	74	COM2	O	-	LCD COMMON
37	KEY_2	-	-	KEY INPUT	75	COM1	O	-	LCD COMMON
38	VASS	-	-	GND	76	COM0	O	-	LCD COMMON
					77	VLC	-	-	GND
					78	NC	-	-	NOT USED
					79	NC	-	-	NOT USED
					80	NC	-	-	NOT USED

CD CHANGER BLOCK SYSTEM CONTROL TERMINAL LEVELS

a. DISC TRAY (LOADING TABLE) (431) POSITION DETECTION

PIN No.	TERMINAL NAME	OPEN	CLOSE	STOP
IC151 27	TR_OPEN	H	L	H
IC151 26	TR_CLOSE	L	H	H

b. DISC CASE (363) AND CD MECHANISM POSITION DETECTION (UP/DOWN)

PIN No.	TERMINAL NAME	LEVEL		
IC151 28	D_UP	H	L	L
IC151 29	D_DOWN	L	H	L
Q1510	CD_PL = "H"	DISC CASE "UP"	DISC CASE "DOWN"	DISC CASE "STOP"
	CD_PL = "L"	CD MECHANISM "DOWN"	CD MECHANISM "UP"	CD MECHANISM "STOP"

c. OPEN / CLOSE SWITCH (339) POSITION DETECTION

PIN No.	DISC TRAY POSITION	SWITCHES POSITION	
		OPEN_SW	CLOSE_SW
IC151 33	OPEN	L	H (2.7V)
	CLOSE	H	L (3.4V)
	etc.	H	H

d. CD MECHANISM UP/DOWN SWITCH (393) POSITION DETECTION

PIN No.	CD MECHANISM POSITION	SWITCHES POSITION	
		CK_ON_SW	CK_OF_SW
IC151 34	UP	L	H (3.4V)
	DOWN	H	L (2.7V)
	etc.	H	H (5.0V)

e. DISC CASE ELEVATOR SENSOR P.C.B (315) POSITION DETECTION

(1) S001 : DISC CASE RESET SWITCH

PIN No.	DISC CASE RESET SWITCH S001 POSITION	DISC CASE POSITION
		DH_LIM INPUT
IC151 34	LIMIT	L (3.4V)
	etc.	H (5 or 2.7V)

CD CHANGER BLOCK SYSTEM CONTROL TERMINAL LEVELS

(2) S002 : UN - LOADING SWITCH

PIN No.	UN - LOADING SWITCH S002 POSITION	LOADING PLATE POSITION
		AM LIM INPUT
IC151 25	LIMIT	L
	etc.	H

(3) PC001 : PHOTO SENSOR

PIN No.	DISC CASE PHOTO SENSOR PC001 POSITION	DISC CASE POSITION
		DH PS INPUT
IC151 24	DETECTION HOLE	H
	etc.	L

f. DISC PRESENT/ABSENT DETECTION BY DISC SENSOR P.C.BOARDS (345, 450)

PIN No.	DISC	PC002, PC003
		DISC PS INPUT
IC151 22	PRESENT	H
	ABSENT	L

g. POSITION DETECTION BY LOADING PLATE SENSOR P.C.BOARD (304)

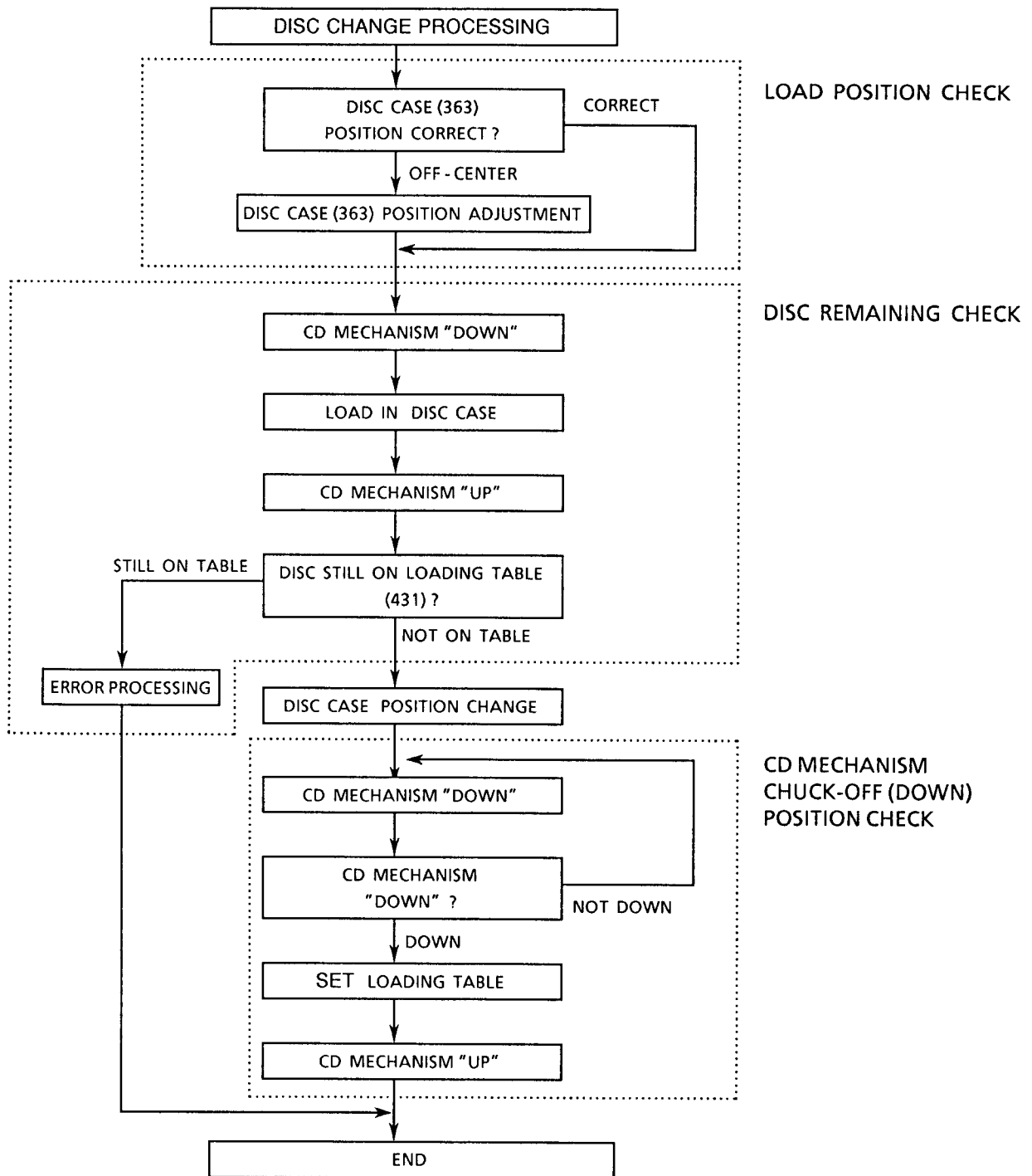
PIN No.	LOADING PLATE (434) POSITION	PC004
		AM PS INPUT
IC151 23	DETECTION HOLE POSITION	H
	etc.	L

h. CD MECHANISM POSITION DETECTION BY DISC SENSOR P.C.BOARD (450)

PIN No.	CD MECHANISM POSITION	S005
		CK SW INPUT
IC501 36	NORMAL	L
	ABNORMAL	H

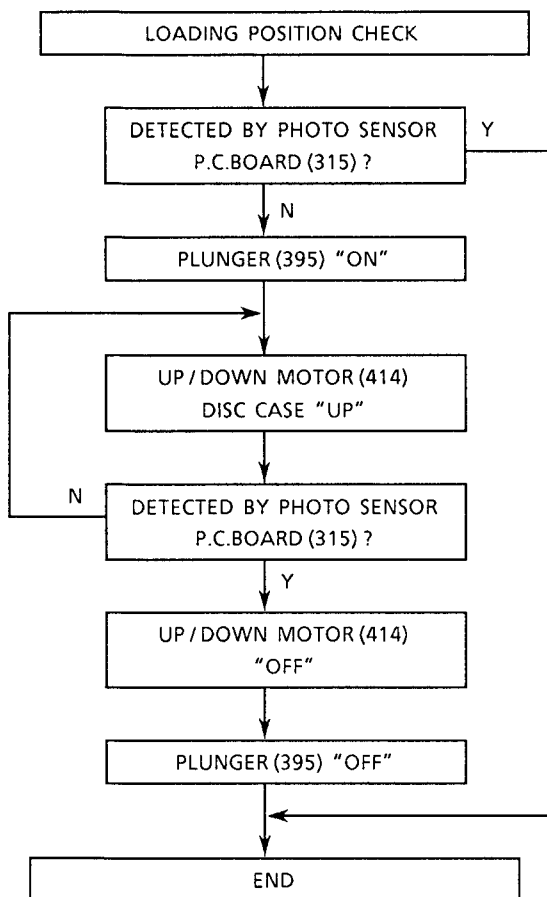
CD CHANGER BLOCK FLOWCHART

a. DISC CHANGING

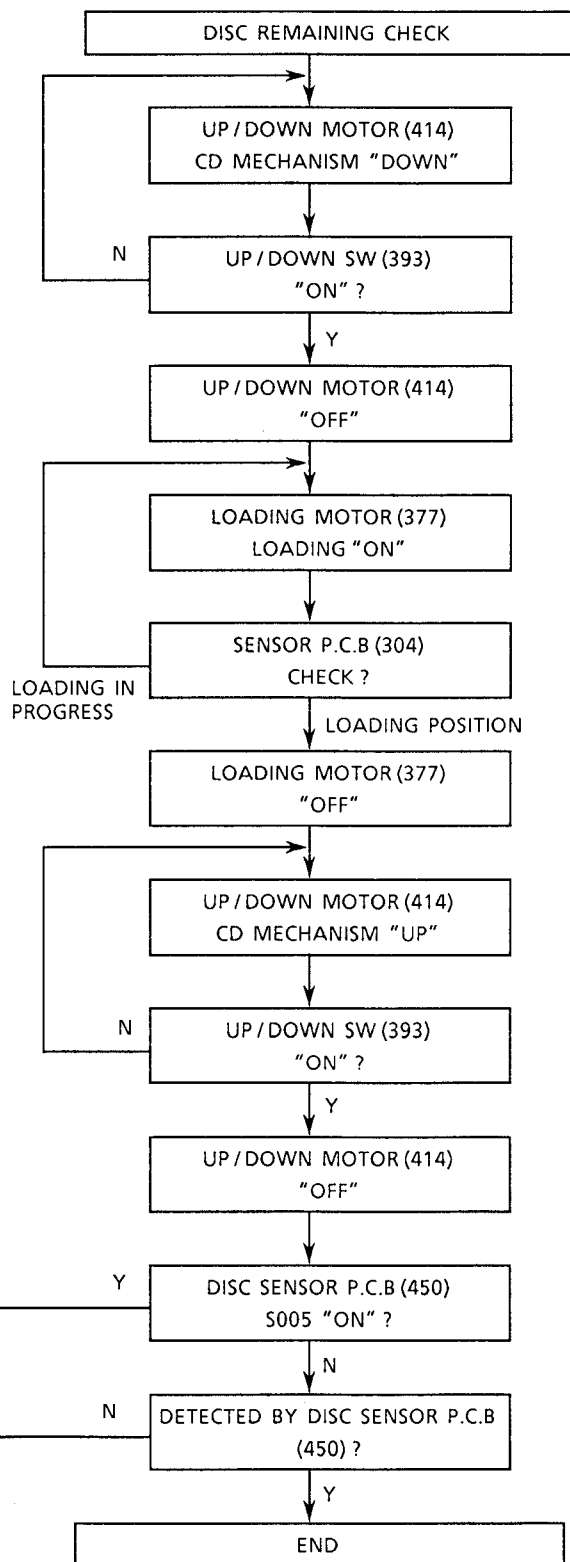


CD CHANGER BLOCK FLOWCHART

b. DISC CASE LOADING POSITION CHECK

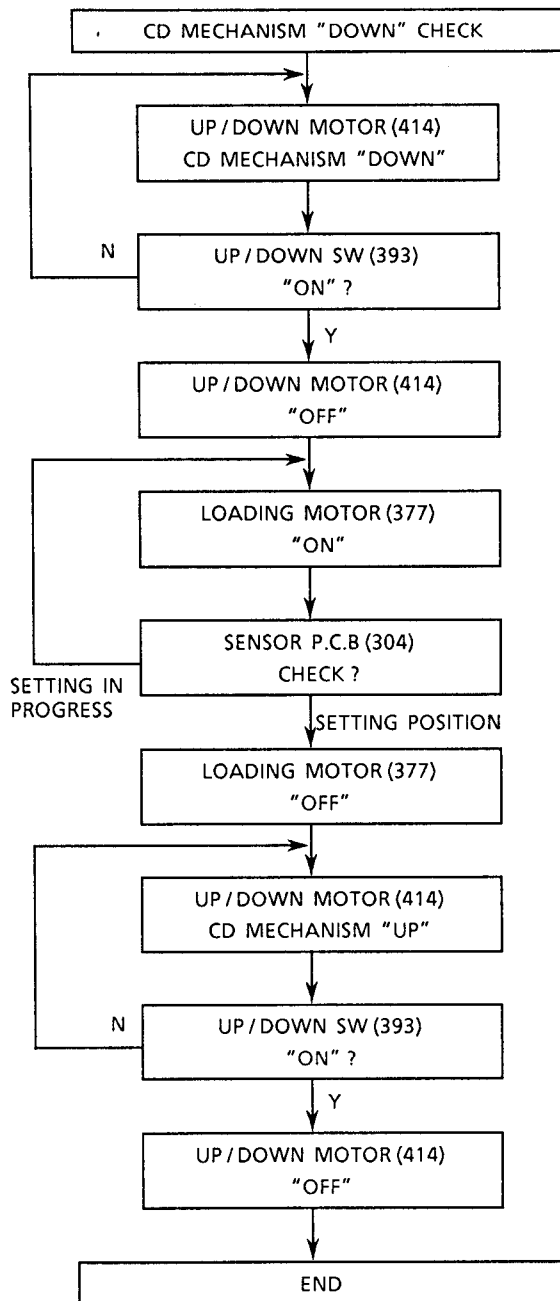


c. LOADING TABLE DISC DETECTION

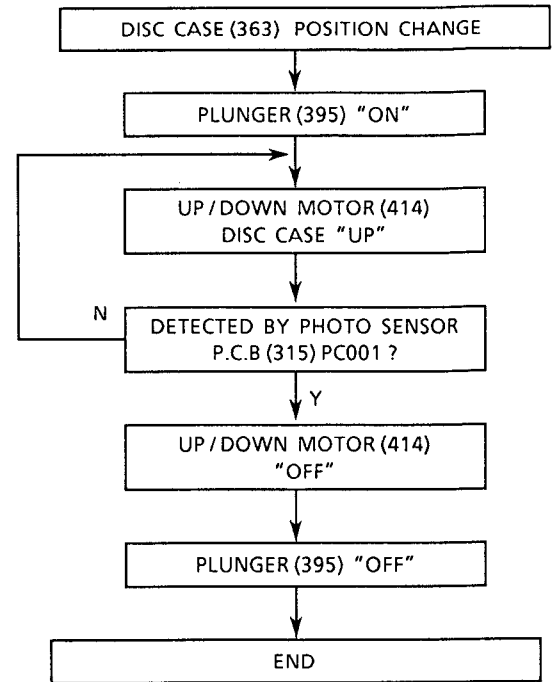


CD CHANGER BLOCK FLOWCHART

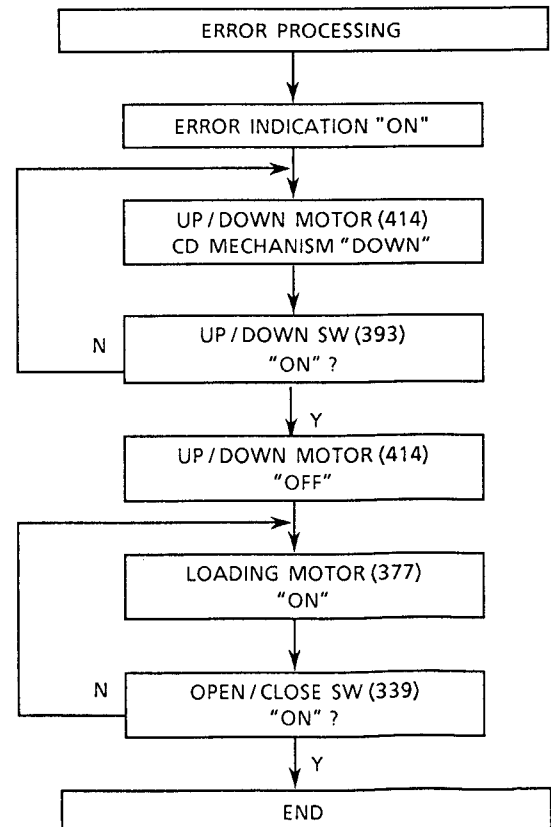
d. CD MECHANISM CHUCK-OFF (DOWN) POSITION CHECK



e. DISC CASE POSITION CHANGE



f. DISC ERROR PROCESSING



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